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ANNUAL REPORT

—OF THE—

STATE BOARD OF HEALTH

—OF—

MARYLAND

—FOR THE—

YEAR ENDING DECEMBER 31, 1898.

BALTIMORE:
PRESS OF KING BROTHERS,
1899.

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BALTIMORE:
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STATE BOARD OF HEALTH, 1898.

Dr. Wm. H. Welch, Baltimore, Term Expires January, 1902.
Dr. John Morris, Baltimore, " " 1002.
Dr. S. Chase de Krafft, Cambridge, " " 1900.
Mr. Fred. H. Smith, C. E., Baltimore, (died December 24, 1898.)
Hon. Harry M. Clabaugh, Attorney-General, *Ex-Officio.*
Dr. C. Hampson Jones, Baltimore City Health Commissioner, *Ex Officio.*
Dr. John S. Fulton, Baltimore, Secretary.

OFFICERS AND EMPLOYEES.

Dr. S. Chase de Krafft, President.
Dr. John S. Fulton, Secretary.
Prof. W. B. D. Penniman, Analyst.
Dr. Wm. R. Stokes, Biologist.
Mr. Chas. N. Mitten, Inspector.
Dr. George H. Everhart, Inspector of Gunpowder and Lake Roland Water-sheds.
M. L. Rullman, Clerk.

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To the Honorable Lloyd Lowndes,
Governor of Maryland.

Sir: I have the honor to transmit the Annual Report of the State Board of Health. The beneficial result of the vital statistic act, as passed by the last session of the Legislature, is beginning to be felt, and will produce still better results when the law is slightly amended. The infectious disease act has been the means of averting an epidemic of small-pox, and the addition of a bacteriological department has greatly enlarged the usefulness of the board to the people of the State. It is with feelings of deep sorrow that I announce the death of Mr. Frederick H. Smith, a member of our board. During his short term of since he endeared himself to all the members, and we deeply deplore his demise.

Yours truly,

S. Chase de Krafft,
President of State Board of Health.

February 1, 1899.

OBITUARY.

Extract from the minutes of the meeting of the State Board of Health on January 12th, 1899.

The following resolution, offered by Dr. Fulton, seconded by Dr. Welch, was passed :

"It is resolved by the State Board of Health that the death of Frederick H. Smith, on December 24th, 1898, has removed from the service of the State, and from the councils of this Board, a member esteemed equally for his worth and wisdom. The secretary is hereby instructed to prepare for record in the minutes of this board, and for publication in the annual report, a suitable memoir of the life, public services, and death of our regretted colleague."

Memoir of Capt. Frederick H. Smith, C. E.*

(*Member of the State Board of Health of Maryland, Member of the American Society of Civil Engineers, the American Society of Architects, etc.*)

On the morning of December 24th, 1898, Capt. Frederick H. Smith passed away at his home, 1004 Cathedral street, Baltimore, Maryland, regretted by all who knew him, and lamented by many.

During his residence in Baltimore he had won the personal friendship of a large circle, and the respect of all with whom he had business relations. A civil engineer by profession, his skill and talent caused him to be employed in important works of design and construction throughout a wide section of the country.

His early work was on the Louisville and Nashville Railroad, from which he went into the service of the Confederate States, and served throughout the war, having at times charge of the manufacture of munitions of war for the departments of Tennessee, Georgia and Alabama.

He organized on an extensive scale the manufacture of nitre for the ordnance department, developed iron mines for the use of the Confederate Government, and was employed in work upon fortifications in the Georgia campaign.

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*This interesting and sympathetic memoir has been kindly furnished by Mrs. Letitia Wrenshall, a relative and life-long friend of Mr. Smith.

Soon after the close of the civil war, Capt. Smith came to Baltimore, where he entered into partnership with his brother, Capt. C. Shaler Smith, and Mr. Charles H. Latrobe, forming the Baltimore Bridge Company.

During his connection with this firm he was also consulting engineer for extensive bridge works in South America. Later Capt. Smith was for some years consulting engineer of the Edgemoor Iron Company, and in the year 1886, was interested with that company, in nine bridge contracts, at different points, on railroads, extending from Arkansas, east to Georgia, and north to Philadelphia. The field work, erection, &c. for all these contracts were in the hands of Capt. Smith, as well as the general designs and estimates for all the bridges except two.

In the same year, 1886, he rebuilt the high bridge on the Norfolk and Western Railroad, which he had constructed some years before. In rebuilding this lofty structure, Capt. Smith used a travelling span, removing 2,352 feet of light Fink truss in 21 spans of 112 feet each, and substituting heavy Pratt trusses. This was finished in forty-nine working days, without stopping trains or using trestle work.

Under the administration of Mr. R. C. Hoffman, of the Seaboard Air Line, Capt. Smith was consulting engineer, and superintended the construction of that company's freight depot in Atlanta, and of various bridges along the line of that railroad.

Capt. Smith was connected in his professional capacity with various engineering works in Baltimore and its vicinity. He was consulting engineer of the elevated trolley road.

He designed and built for the city the Ramsay Street bridge, which is a stone structure, having the full width of the street, 66 feet.

In the early part of 1893 he built the Baltimore Street bridge, which is 70 feet wide.

The great North Avenue bridge gave perhaps the finest opening for Capt. Smith's talent as an engineer. He was unfortunately much hampered in its building by local conditions, which occasioned changes of plan during construction. Plans for this great bridge were begun in June, 1891, and in July the removal was commenced of the old combination bridge, which had been built twenty years before, by John W. Bollman. A temporary structure of timber was put up to allow the continuance of travel. The work on the west abutment was begun early in August, 1892, and completed in a few months. A controversy then arising between the Baltimore Belt Railroad and the city as to the height of the bridge above their tracks, delay ensued, which was protracted by a disagreement between those in favor of a steel bridge and others desiring a stone structure. The latter having been finally determined upon, the work on the main bridge commenced in July, 1893, and the whole structure was completed in August, 1896.

The main bridge contains three spans of 130 feet each, with a rise of 26 feet and is 100 feet wide, its maximum height above the ground being 60 feet.

The entire cost involved was $540,000. It may be stated that when the keys of the arches were struck the settlement was only ⅝ of an inch, while the settlement of the two arches of the London bridge, similar to those of the North Avenue bridge, was 1⅝ inches.

Outside of his professional work, Captain Smith found time for other issues. He was interested in the organization of, and was a director in, the Fidelity and Deposit Company of Baltimore.

In January, 1898, Governor Lowndes appointed Captain Smith a member of the State Board of Health. to fill the unexpired term of Mr. Henry Brauns, resigned. He brought to this work a great store of technical knowledge and a most intelligent interest in sanitary administration.

Captain Smith's learning in natural science was very great, and various literary productions were the outcome of it, one of the most interesting being a pamphlet called "The Pocket Geologist," a useful and delightful introduction to the study of geology. This work afterward developed into another volume with matter of additional interest, especially pertaining to minerals.

This brief account of the work accomplished by Captain Smith may serve to show his energy and strength of purpose, which were the more remarkable when exerted, as they were, under the most harassing conditions of ill-health. For many years his physical condition had been extremely precarious, yet such was his vitality and force of will, that, though looking death in the face, he lived and worked when men of less determined character would have succumbed to weariness and suffering.

The personal traits of Captain Smith were of a rare order. He possessed great bravery, combined with sweetness of disposition, keen humor, and a strong sense of justice. These, united to a mind of extraordinary quickness, formed a character of singular interest. His conversation, which was brilliant, covered a wide range of subjects. Sickness and suffering seemed to brighten and quicken the intellect of this gifted man, while powerless to cloud the peaceful atmosphere of his home life. Under the long strain of ill-health he was always cheerful, tender and considerate. The very last words he uttered before falling into the sleep through which he passed peacefully away, were of loving solicitude for his devoted wife and children.

Of such a man much indeed might be said, and yet not all be told.

ERRATUM.

On page 11, the town of Brunswick is said to have less than one thousand inhabitants. For "less than one" read "less than three."

REPORT OF THE SECRETARY.

Since the last report of the State Board of Health was submitted to your Excellency and to the General Assembly a marked advance has been made in the sanitary government of the State. The Legislature of 1898 gave Maryland the first vital statistics law. All the previous law upon the subject was contained in a single section of article 43, which directed the Secretary of the State Board of Health to collect the vital statistics of the State, but provided no means whatever for the registration of either births or deaths.

Without systematic registration of both births and deaths the State can at no time know her capital in human life, nor how the balance sheet of life and death stands. The whole of our social fabric is built upon the belief that we shall grow in strength and in numbers, but hitherto we have applied no test to this fundamental proposition. The business of a great State has been run for years without an inquiry concerning death, the largest item of the fixed charges. An expensive department of State government, operating since 1874 for the express purpose of limiting the waste of human life, has not been able to render any account of the annual loss, nor to demonstrate its favorable influence upon this most material interest of the commonwealth. The older boards of health were organized to meet emergencies, to deal with extraordinary menaces to human life. Between epidemics they were looked upon much as an army in time of peace. With this obsolescent conception of a board of health, Maryland has been over long content. It is against the ordinary mortality of the community that the modern sanitary authority moves. Progressive States no longer allow death to collect his dues at will. It has been found by examining the charges that many items can be successfully disputed. The prime requisite to such a contest is a close scrutiny of the causes of death. This the new law promises to give us. During six months of its operation it has not furnished us with any true index of the ordinary rate of mortality in Maryland, but we may for the present rely upon its indications as to the relative importance of several mitigable causes of death, as will appear later in this report.

The law, as it passed the Assembly, is not up to the modern standard of registration laws. Sanitarians are most deeply concerned with the current account of deaths, with special reference to causes. The record cannot speedily follow the event, except it has been made at the time and place of death. Such prompt registration cannot be obtained unless the record is made an essential preliminary to the disposal of the dead body. The *burial permit* is therefore the key to prompt registration. The Legislature removed from the original bill all the provisions for burial permits, so that funerals are sometimes conducted now as formerly, without any written evidence of official approval, and the returns are made to the local registrar at the end of each month, and to the State Registrar five days later.

Undertakers who have reason to believe that the proper record has been made are permitted to bury a human body without reporting the fact or obtaining any permission. It is probable that many deaths occur which are not recorded at all, but it is also certain that any physician or undertaker who habitually neglects his returns will be discovered in such a delinquency within a few months by the State Registrar.

The success of such a law must depend upon the vigilance and energy of local registrars. Wherever the local registrars have been actively interested in this work the results have surpassed all reasonable expectations.

The text of the law follows:

SECTION 6. The Secretary of the State Board of Health shall be the State Registrar of Vital Statistics for Maryland. He shall, under the direction of the State Board of Health, prepare the necessary methods, books and forms for accurate registration of births and deaths, and shall supply to local registrars, health officers, ministers, physicians, undertakers, midwives and other persons charged with any duty under this Act the proper blanks, forms and books of record. The State Registrar shall collect, tabulate and preserve the records of the vital statistics of the State. Annually, in the month of January, he shall prepare a general abstract and report of the vital statistics for the preceding year, so tabulated and arranged as to render them of practical utility, and shall have printed not more than one thousand copies, of which he shall forward five copies each to the Governor and the State Librarian, one to each member of the General Assembly of Maryland, one to each local registrar of vital statistics, one to the board of health of each State and territory of the United States, and the remainder to such departments, libraries and persons as may seem to the State Registrar entitled to the same.

SEC. 6 A. The health officers of the various counties and the health officers of all towns and cities, not already by charter or ordinance provided with a registrar of vital statistics, shall be *ex-officio* local registrars of vital statistics, and shall qualify, by oath, to perform faithfully their duties as such.

SEC. 6 B. All physicians shall be sub-registrars of vital statistics, and shall be authorized and required to make all such records and certificates as are made and issued by the local registrar, and shall in the first five days of each month send to the local registrar all certificates and records made during the month next preceding.

SEC. 6 C. The record of a birth shall state the date and place of its occurrence, name in full, sex and color, and the number of the child, whether living or still-born, and the names, color, occupation, birth-place and residence of parents, name and address of the physician, mid-wife or attendant at the birth. The record of a death shall state the date and place of its occurrence, name, age, sex, color, condition, birth-place, cause of death, duration of illness, the names, residence, color of parents and the name and address of the attending physician.

SEC. 6 D. Every local registrar shall distribute to all sub-registrars and other persons in his district, who, in his judgment, are likely to need them, blank forms of certificates and returns, required by law to be made to him; shall execute the provisions of all local ordinances, not contrary to law, that may be enacted to more effectually insure correct registration of births and deaths; shall record in the books furnished by the State Registrar of Vital Statistics such facts as may be therein required; shall amend his records, as he may discover mistakes or omissions; shall, if possible, keep such records in a fire-proof safe; shall, on or before the tenth day of each month, transmit to the State Registrar of Vital Statistics, in the envelopes furnished for that purpose, the originals of all certificates, permits and records remaining in his possession on the last day of the month next preceding; provided, that the State Registrar may, in the event of unusual sickness or mortality, or for the purpose of legal or legislative inquiry, require of any local registrar returns at shorter intervals.

SEC. 6 E. In all cases of death where no physician was in attendance, the coroner, undertaker or other person in charge of the interment of such dead body shall make record, as far as possible, of the facts required in a certificate of death, and shall forward the same to the nearest registrar or sub-registrar, within five days. In all cases of death from small-pox, yellow fever, diphtheria, scarlet fever or other contagious or infectious diseases dangerous to public health, the certificates of death shall be forwarded immediately, and interment shall be conducted in accordance with the rules of the State Board of Health.

SEC. 6 F. Application for a permit to disinter a human body shall be made by the presentation to the local registrar of a certificate of death properly made and containing the facts required by law for a record of a death. Upon receipt of such a certificate the registrar shall issue a permit for the disinterment. No disinterment of the body of any deceased person during the months of July and August shall be issued except when required for the purpose of a legal investigation; nor shall any such permit be issued in cases where death was caused by infectious or contagious disease, except by permission and under the direction of the local board of health.

SEC. 6 G. Every mid-wife, who shall have professional charge of the mother at the birth of any child where no physician is in attendance, shall, within four days next succeeding the birth, furnish the registrar or sub-registrar of the town or district wherein such birth shall have taken place a certificate, stating from the best information which can be obtained the name, if such a child have a name, the place and date of birth, its sex, the name of the father and the maiden name of the mother, the ages, color, residence and nationality of the parents, the occupation of the father, number of the child, and the name and address of the attendant.

Sec. 6 H. Parents shall give notice to the registrar of their city, town or county of the birth or deaths of their children; every householder shall give notice of every birth and death happening in his house; the eldest person next of kin shall give such notice of the death of his kindred; the keeper of a workhouse, house of correction, prison, hospital, reformatory, almshouse or other institution, and the master or other commanding officer of a ship or vessel shall give notice of every birth or death happening among the people under his charge.

Sec. 6 J. The records of births and deaths shall be preserved by the registrar, and shall be open to inspection by all persons for proper purposes, by all city, town or county officials, by the State Registrar or his accredited representative; provided, that such examination shall be made in such a way that the contents of the registers shall not be subjected to risk of damage or alteration, and the prompt registry of the births and deaths received by the registrar shall not be interrupted. The registrar shall promptly inquire into the facts when any omissions or discrepancies in the personal or statistical facts are called to his attention, shall truly ascertain such missing facts of record, and make a certified statement thereof to the State Registrar, and enter the correction in red ink over his official signature upon his record. The contents of the register, or a copy thereof duly certified by the registrar, shall be prima facie evidence in all courts, and for all purposes of the facts relative to any birth or death therein recorded, and shall be verified, in case of dispute, by a certified copy of the original certificate of birth or death from the State Registrar.

Sec. 6 K. The local registrar shall receive for performing the services required by this Act the following fees: For a permit to disinter a human body, except when required for the purpose of legal investigation, twenty-five cents, to be paid by the person to whom such permit is issued; for a copy of the record of a birth or death, twenty-five cents, together with payment for time of search, if over half an hour at the rate of fifty cents an hour, to be paid by the person to whom such copy is furnished. The State Registrar shall certify to each local registrar quarterly, or oftener, if it shall be considered expedient, the number of properly executed certificates of births and deaths received from such local registrar for the year or portion of year included; provided, that cities having a population of ten thousand inhabitants, or over, shall have power to fix the compensation of local registrars for the duties required by this Act.

Sec. 6 L. The State Registrar shall receive the certificate returned under this Act, permanently bind and preserve them, make indexes thereto and issue certified statements of the facts relating to any birth or death. For each such certified statement he shall receive a fee of twenty-five cents, together with payment for the time of search, if over half an hour at the rate of fifty cents an hour, to be paid by the person asking such certified statement.

SEC. 6 M. Any physician or mid-wife, coroner or undertaker, whose duty it is, who fails to report a birth as provided by section 6 G of this article, shall be liable to a fine of not less than five nor more than twenty-five dollars or be imprisoned not less than thirty days; or be both fined and imprisoned, in the discretion of the court. Any undertaker, express agent, railroad official or employe, or other person controlling, directing or in charge of the interment, entombment, removal or other disposition of the body of a deceased person, before the record shall be made as required by section 6 C of this Act, shall be liable to a fine of not less than ten or more than five hundred dollars, or to be imprisoned not to exceed thirty days; or to both fine and imprisonment. Any physician who shall refuse or fail to make a proper and correct certificate of the cause of death of any person upon whom he or she was the last medical attendant, to the best of his knowledge or belief, shall be liable to a fine not less than five nor more than fifty dollars, or to be imprisoned not to exceed thirty days; or to both fine and imprisonment. Any registrar who shall, without justifiable cause, neglect or refuse to perform any of the duties enjoined on him by this Act, or who shall communicate to any person not authorized to receive the same any of the personal or statistical facts recorded on his register, shall be deemed guilty of a misdemeanor, and on conviction thereof shall be fined not exceeding three hundred dollars.

Amendments to the Original Bill.

In the bill as originally offered, section 6 A read as follows:

"The Registers of Wills in the various counties and the health officers of all towns and cities, not already by charter or ordinance provided with a registrar of vital statistics, shall be *ex-officio* local registrars of vital statistics, and shall qualify, by oath, to perform faithfully their duties as such."

The health officers, as the law in force provides, are undoubtedly capable in most instances of being better registration officers than the registers of wills, but the term of a county health officer is too often only one year, so that the records are likely to be moved from place to place, instead of remaining as they should in a central office, known to all the citizens, and adapted to the care of public documents. The work of the register of wills' office is continuous and must be kept in competent hands. The local boards of health, on the other hand, sometimes choose for executive officer the least competent among the local physicians. This is fortunately not the rule, so that the law has upon the whole succeeded better because the registration is in medical hands.

Sub-Registrars.

Section 6 B in the original bill was as follows:

"Each local registrar shall have power to appoint competent persons, to the number of not more than one for each election district in the registrar's jurisdiction, to act as sub-registrars. Such appointments shall be made so as to suit the convenience of each locality, shall be certified in writing, and shall be recorded in the office of the State Registrar. Such sub-registrars shall be duly sworn to the faithful performance of their duties, and their term of office shall not extend beyond the term of office of the appointing registrar. Each sub-registrar shall be authorized to make all such records and to issue all such certificates and permits as are made and issued by the local registrar, and shall, in the first five days of each month, send to the local registrar the originals of all certificates, records and permits remaining in his possession on the last day of the preceding month."

The law in force makes all physicians sub-registrars, and may be expected to work fairly well, so long as no burial permits are issued by physicians, and no responsibilities imposed beyond the reporting of births and deaths occurring under each physician's own observation.

Burial and Removal Permits.

Section 6 E of the original bill provided that:

"No interment of any dead body of any human being, or disposition thereof in any tomb, vault or cemetery, nor any embalming process, or injection of any preservative substance, shall be made without a permit as aforesaid from the registrar or sub-registrar of the district where said person died, or otherwise than in accordance with such permit. The application for a burial or removal permit, together with the statement of facts required therein, shall be signed by a relative, friend, householder, manager of the institution upon whose premises the death occurred, or by any competent person acquainted with the facts. The certificate of death shall be signed by the physician last in attendance upon the deceased person, (or by the health officer or coroner, in case of death without medical attendance or of sudden or violent death.) It shall be the duty of the undertaker or other person in charge of the burial or removal of the body of any deceased person whose death occurs in any registration district of the State, to obtain the application for burial or removal permit, with the certificate of death, file the same with the registrar in whose district the death occurred, and obtain the proper burial or removal permit based thereon from the registrar prior to the burial or removal of the corpse, and it is hereby made the duty of the attending physician, in attendance upon any person who shall die, to leave with the family or at the home of the deceased a certificate setting forth the cause of such death, which certificate shall, by the said family or friends of the deceased, be given to the undertaker, in order that he may obtain from the registrar the proper burial or removal permit. And it shall be the express duty of the registrar to see that the law governing the issue of burial and removal permits is strictly complied with, that all personal and statistical information, required on the blank applications, is fully supplied, so far as it is possible to obtain the same with reasonable effort, and that a clear and distinct statement of the cause of death, so far as known, is made by the certifying physician. In case of doubt in regard to the return of a cause of death, or if a vague or ambiguous statement is made under that head, the registrar, before granting a permit, shall immediately refer the application to the health officer or coroner, who shall investigate and report the facts over his official signature; provided, that in case of an investigation of an unsatisfactory return, the registrar may issue, in his discretion, when it shall appear that death resulted from natural causes and not from unlawful means, a temporary permit allowing burial or removal, which temporary permit shall be cancelled by regular permit issued in due form upon the completion of the proper return; and provided, further, that in case of death from any contagious or infectious disease, said certificate shall be made and forwarded immediately."

This section was removed *in toto*. We shall sooner or later be obliged to regulate funerals and to issue burial permits in all cases. This is necessary not only for the sake of full records, but in order to prevent hasty interment or improper treatment of the bodies of those who die under suspicious circumstances. It is also important to regulate the disinterment and removal of dead bodies.

Burial permits are issued in accordance with local ordinances in Baltimore, Cumberland, Frederick, Frostburg, Lonaconing and Brunswick.

Marriage and Divorce.

Two sections providing for statistics of marriage and divorce were stricken out of the original bill. The interest of the State Board of Health in these matters is of relatively little importance.

Registrars' Fees.

Provision was made in the original bill for fixing the fees of local registrars for the duties required by the Act. A fee of twenty cents was proposed for each complete record of a birth or death. The fees in registration States vary between fifteen and twenty cents, and the labor of a small registration office is fairly compensated by the larger fee. In the registration offices of large communities salaries should be paid. The collection of vital statistics is no less valuable to the community than to the State, and the cost should be paid by the locality. In the law, as it stands, the question of pay is left to the discretion of the county commissioners, and it remains to be seen whether their discretion will improve or injure the efficiency of the local boards of health.

The Infectious Disease Notification Act.

This law, to the surprise of the State Board of Health, passed the Assembly without material amendment. It is an excellent law, but must be regarded as too long a step in Maryland practice. In so far as it relates to diphtheria, scarlet fever, small-pox and yellow fever, it is likely to meet but little opposition, and has already furnished local boards of health with much necessary information. Its benefits will perhaps be long in reaching the sparsely settled districts, but in the larger communities it has met a ready response on the part of the people and the medical profession. It puts all the town boards of health in a position to combat the infectious diseases more effectually than they formerly could, and gives their operations a wider radius. This act also gives the public school authorities more definite powers in respect to those diseases which most affect children. Of the twenty-three county school boards, some make profitable use of the timely information which this law brings to them, but others still refuse recognition to danger when not vouched for by disaster.

It is now and then necessary to close a school for a short time on account of the prevalence of diphtheria or scarlet fever among the children. In some such instances the school boards have cut off the teachers' salaries for the period of this enforced vacation. This is an outrage upon the underpaid teacher, and a crass blunder in public policy. It deprives the health authorities of the co-operation of teachers, excites their reasonable opposition to necessary sanitary measures, and encourages the concealment of infectious diseases. The cost of public education in this State in money is not unreasonably large, but its cost in human life, in so far as it may be limited by available means, is criminal.

The Practice of Mid-Wives.

The same law places a wise restriction upon the practice of mid-wives. In the course of time, no doubt, many lives will be saved and much serious illness averted by the prompt notification of health officers when parturient women become infected. Already many mid-wives practicing in the vicinity of Baltimore have through the operation of this law been instructed concerning the great danger of carrying these infections from one lying-in chamber to another. It is now in the power of all town boards to convey this instruction to the humble women who practice mid-wifery, and to punish neglect of the simple precautions enjoined by the law. From the larger towns the benefits of this supervision should spread into the rural districts. The lives protected by this section of the law are chiefly those of women too poor to engage skilled medical attendance during the lying-in period.

The registration of mid-wives required by this act goes on very slowly. A great many ignorant women perform these services, and it will be long before anything like a complete list of them can be made.

State Biological Laboratory.

This act also provides for the employment by the State Board of Health of a competent bacteriologist to do such work in the interests of public health as the State Board of Health may from time to time direct. This work was begun in June by the engagement of Dr. Wm. R. Stokes as biologist. Systematic examinations are made for the diagnosis of diphtheria, typhoid fever, malaria, and tuberculosis, free of cost to the physicians sending specimens. For this purpose boxes of necessary supplies are sent to various distributing points, convenient of access to practicing physicians throughout the State. In all cases the local health officers have been asked to select these distributing agents, but it has been found that a few of the local health officers do not care for the aid of modern laboratory methods. Wherever the supplies have been used their use has grown, and the results have been found very valuable. The appropriation made for this purpose is a small one, and in order to extend its benefits as far as possible, it has been thought wise to have the work done in the laboratory of the Baltimore City Health Department. By combining the apparatus and materials of the city with the apparatus and materials belonging to the State, a thoroughly well-equipped laboratory is maintained at small cost. This experiment has been carried on now for six months with no less advantage to the city than to the State. It would be difficult to overestimate the value of this work. It gives to persons sick of certain infectious diseases the advantage of diagnosis earlier, and often more positive, than can be reached by clinical methods. It informs health officers of the presence of infectious disease, and it is particularly useful in resolving the doubts of physicians in obscure cases. The cost of this work will undoubtedly increase, but its value will grow in a greater ratio. In the examination of water supplies, both public and private, the biological laboratory has been of marked service. A detailed account of the first six months' work of this laboratory is given by Dr. Stokes in the later pages of this report.

The text of the law is as follows:

SEC. 34 A. Whenever any householder knows that a person within his family or house is sick of small-pox, diphtheria, membranous croup, scarlet fever, typhoid fever, typhus fever, measles, mumps, whooping-cough or any other infectious or contagious disease, dangerous to public health, he shall immediately give notice thereof to the board of health of the city or county in which he dwells, and upon the death, recovery or removal of such person or persons, such of the rooms of said house and such of the articles therein as, in the opinion of the local "Board of Health," have been subjected to infection or contagion shall be disinfected by said board of health, and a written statement of the fact of such disinfection shall be given to such householder. Any person neglecting or refusing to comply with any of the above provisions shall be punished by a fine not exceeding one hundred dollars.

SEC. 34 B. Whenever any physician knows that any person whom he is called to visit is infected with small-pox, diphtheria, membranous croup, scarlet fever, typhoid fever, typhus fever, yellow fever, measles, whooping-cough or any other contagious or infectious disease, dangerous to public health, he shall immedietely give notice thereof in writing, over his own signature, to the board of health of the city, or town or county in which such disease exists; and if he refuses or neglects to give notice he shall be fined not less than fifty nor more than two hundred dollars.

SEC. 34 C. The boards of health in the several cities, towns and counties shall cause a record to be kept of all reports received in pursuance of the preceding sections, and such record shall contain the names of all persons who are sick with infectious or contagious diseases, the localities in which they live, the disease with which they are affected, together with the date and names of the persons reporting any such cases, and the record of quarantine, isolation, disinfection and other preventive measures. The boards of health shall give the school boards of their respective counties, cities or towns immediate information of all cases of infectious or contagious disease reported to them according to the provisions of this Act.

SEC. 34 D. When any board of health has had notice of the occurrence, within its sanitary jurisdiction, of a case of small-pox, or any other contagious or infectious disease dangerous to public health, such board of health shall, within twenty-four hours after the receipt of such, notice notify the State Board of Health of the same.

SEC. 34 E. All questions of doubt concerning the cause or nature of any sickness believed or suspected to be of an infectious or contagious character, shall be referred to the State Board of Health; and the said Board shall be authorized to employ a competent bacteriologist to conduct inquiries into the nature, source and vehicles of infectious disease. The services of the bacteriologist of the State Board of Health shall be free to all local boards of health and to all practicing physicians in the State for such inquiries concerning infections and contagious diseases as the said board may from time to time direct, and to the State vaccine agent for testing vaccine virus. The sum of twenty-five hundred dollars annually, or so much thereof as may be necessary, shall be paid by the Treasurer of the State, upon the warrant of the Comptroller, at such times and in such sums as may be authorized by the State Board of Health upon presentation of the proper vouchers for expenses.

Sec. 34 F. Every person not a legally qualified physician, practicing as mid-wife, or acting as attendant upon women in child-bed in this State, who shall find any lying-in woman to have fever, shall forthwith notify the health officers of the district, and shall refrain from attendance upon any other parturient woman or woman in child-bed, until the local health officer shall give her written permission to resume such practice. Every mid-wife, obstetrical nurse or other person, not a legally qualified physician, attending for pay or hire, upon any lying-in woman or woman in child-bed, shall send his or her name and address to be registered in the office of the Registrar of Vital Statisitcs for the city, town or county in which he or she resides. And any person violating the provisions of this Act shall be guilty of a misdemeanor, and shall, upon conviction, be fined not exceeding one hundred dollars, or imprisonment not exceeding six months; or be both fined and imprisoned in the discretion of the Court.

Local Boards of Health.

There are now forty local boards of health in the State. Some of the town boards, more recently organized, have endeavored to apply the most approved principles of sanitary law. One of them has done such excellent work as to deserve especial mention. This is the Board of Health of Brunswick, in Frederick county. This small town of less than one thousand inhabitants has its own registration of vital statistics, issues burial permits, enforces the notification ordinances, practices isolation and disinfection at public cost, makes systematic inspections, uses the newspapers to propagate a knowledge of hygiene, and makes detailed and truthful reports to the State Board of Health.

The county boards of health have many of them done excellent work during the year. Reports from most of them appear later in this volume. Comparing these reports of county boards with those of former years a very material improvement will be found, in that more specific information is conveyed, and that the local conditions unfavorable to public health are dealt with more emphatically. It may be said that, as a general rule, those reports are most trustworthy which show up most vividly the prevalent sanitary vices, so that those communities which have received the most unflattering treatment at the hands of their health officers are probably much better defended against disease than the communities of which smooth things are written.

But one county in the State, Somerset, remains unprovided with a board of health. Notwithstanding the neglect of this matter by the County Commissioners, the vital statistics law has gained a foothold there, and will in a short time demonstrate a part of the cost of this neglect.

While the local public health service has sensibly improved in most counties, a few instances of gross neglect on the part of local officers have come to the knowledge of the State Board of Health. The Local Board of Health of Carroll county has deteriorated during the year very nearly to worthlessness. If any sanitary work has been initiated by the local board in that county during the year the State Board of Health has not heard of it. On the other hand, matters of necessity referred by the State Board to the local officer have been either ill attended to or wholly neglected. In Baltimore county sanitary work has made on the whole no advance. The Catonsville district, under the care of Dr. Chas. L. Mattfeldt, has had very superior service. Elsewhere in the county the results of sanitary administration so far as they have been good are to the State Board of Health unknown.

No power is vested in this Board to discipline delinquent local officers. We can do no more than report the facts to the local board. This has been done in a few instances during the year, and the representations of the State Board of Health have been acted upon fairly and wisely. It is quite possible however for a local officer having sufficient political influence not only to slight the affairs of his office, but to obstruct the operations of the State Board of Health in his jurisdiction.

Tnere is unquestionably need of some sort of organic union between the State and Local Boards of Health. At present the State Board of Health cannot require reports from local boards, except of births and deaths and of the grave infectious diseases, as small-pox. Not being obliged to inform any one else, the local officers often neglect to inform themselves about important matters transpiring within their own jurisdictions. The salaries received by some of the local officers are so small as to suggest that they are meant as gratuities to idleness.

Later in this volume the reports of the local officers will be found. Note is made of each failure to make a report. The law of Maryland says concerning the duties of local health officers, "he shall keep an accurate record of the proceedings of the Local Board of Health of which he is secretary, as well as his own official acts, and furnish a copy thereof annually, in the month of October, to the secretary of the State Board of Health, together with such other information in regard to the sanitary condition of his county as he may deem interesting or valuable for publication in the report of the State Board of Health." In those counties whose health officers send no reports to the State Board of Health, it is safe to assume that no written report is made to the Local Board of Health, and that the official acts during the year have been neither "interesting nor valuable."

For neglect of this sort the health officer is not always alone responsible. Some of the boards of county commissioners are very inconsiderate of the health officer's representations, and will not meet as boards of health. They apparently hold the view that when there is no strange pestilence in the community the health officer has nothing to do. But one county health officer has succeeded in getting his board to give him their attention once a month.

One wishes that the local boards of health might be listed here in order of merit. There is an enormous gap between the best and the worst of them. By consulting the local reports one may divide them roughly into two classes. Of these local boards whose reports indicate serious and steady work, some deserve higher praise than we can bestow without invidiousness.

These remarks refer to county boards of health. Town boards of health are operated under their charters, and the town health officers are perhaps not required to report to the State Board of Health. They were all requested to do so.

List of Local Health Officers.

Counties.	*Names.*
Allegany	Dr. Chas. H. Brace, Cumberland.
Anne Arundel	Dr. John M. Worthington, Annapolis.
Baltimore	Dr. J. C. Schofield, 432 Philadelphia Road.
"	Dr. Chas. L. Mattfeldt, Catonsville and vicinity.
"	Dr. A. S. Warner, Highlandtown and vicinity.
Calvert	Dr. T. M. Chaney, Dunkirk.
Caroline	Dr. J. L. Noble, Preston.
Carroll	Dr. J. S. Matthias, Westminster.
Cecil	Dr. Howard Bratton, Elkton.
Charles	Dr. C. H. Posey, Faulkner.
Dorchester	Dr. Geo. P. Jones, East Newmarket.
Frederick	Dr. D. M. Devilbiss, Woodville.
Garrett	Dr. W. H. Ravenscroft, Oakland.
Harford	Dr. Chas. A. Hollingsworth, Belair.
Howard	Dr. Thos. B. Owings, Ellicott City.
Kent	Dr. W. Frank Hines, Chestertown.
*Montgomery	Dr. E. E. Stonestreet, Rockville.
Prince George's	Dr. W. H. Gibbons, Croom P. O.
Queen Anne's	Dr. James Bordley, Centreville.
Somerset	No health officer.
St. Mary's	Dr. L. B. Johnson, Morganza.
Talbot	Dr. T. A. Councell, Easton.
‡Washington	Dr. J. McP. Scott, Hagerstown.
Wicomico	Dr. Chas. R. Truitt, Salisbury.
Worcester	Dr. Chas. P. Jones, Snow Hill.

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*In Olney district, Montgomery county, there is an excellent Local Board of Health, incorporated by an Act of the General Assembly, independent of the County Board of Health.

‡There are in Washington county fifteen vaccine physicians, one in each election district, each exercising the general sanitary supervision, and reporting to Dr. Scott, health officer.

Town Health Officers.

Aberdeen	Dr. J. H. Kennedy.
Annapolis	Dr. Wm. S. Welch.
Brunswick	Dr. H. S. Hedges.
Cambridge	Dr. John Mace.
§Crisfield	Dr. J. F. Somers.
Cumberland	Dr. Geo. L. Carder.
Frederick	Dr. C. F. Goodell.
Frostburg	Dr. W. Oliver McLane.
Havre de Grace	Dr. H. S. Weusthoff.
Kensington	Dr. W. L. Lewis.
Laurel	Dr. J. R. Huntt.
Lonaconing	Dr. J. O. Bullock.
Towson	Mr. Harry Longnecker.

Typhoid Fever.

The statistics of the past six months, while they do not measure the prevalence of typhoid fever, show its relative importance as a cause of death. Among the preventable causes of adult deaths it is second only to tuberculosis. There can be little doubt that the people of the State are learning of their right to be protected against this form of infection. Requests for investigation have been made in many outbreaks during the year, and some letters have been received from bereaved families ascribing their misfortunes more or less directly to avoidable causes. The following is part of a letter from an intelligent citizen of one of our western counties:

"I have recently lost a little daughter from typhoid fever, and have abundant reason to believe that the disease was conveyed to me in milk from a fever-infested home—four cases of fever in the house, and furnished me milk over a month without saying a word about the situation, and as a consequence my little daughter is under the snow. Typhoid fever prevails here, and from the criminal negligence evident on every hand I see no reason why it should not prevail indefinitely. No one seems to be doing anything to root it out or to set any means in motion to secure better sanitary conditions. There are about 3,000 people in———. Cannot a town of this size secure from the State a health officer? As it is at present a man is absolutely at the mercy of any one who will sell his typhoid fever germs at a nickel a quart.

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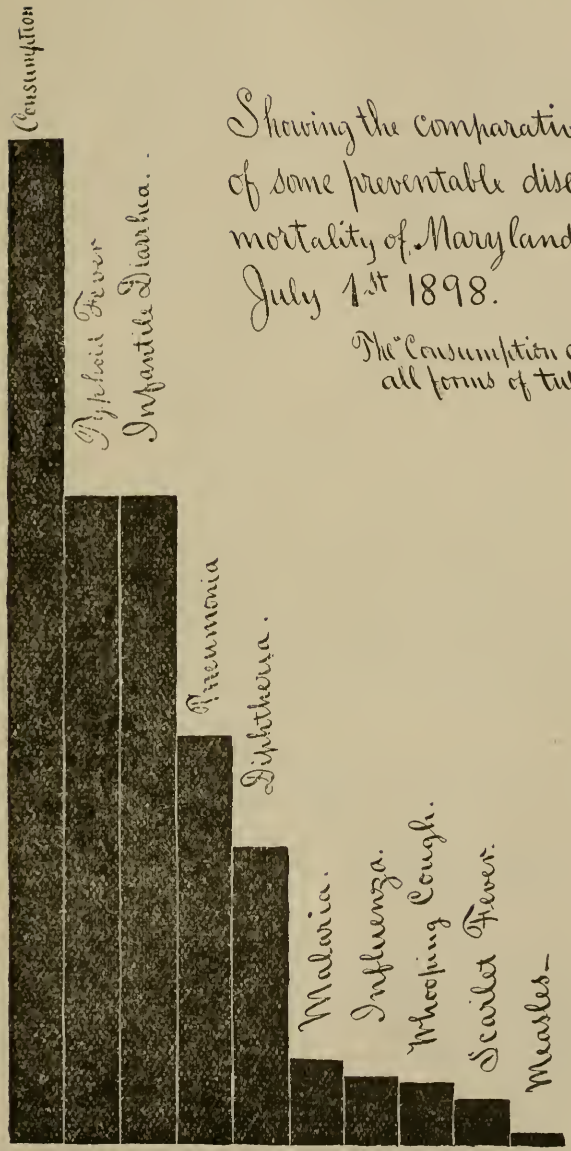
§The board of health of Crisfield has just been organized, (January, 1898.)

Such important towns as Hagerstown, Salisbury, Easton, Chestertown, Centreville, Elkton, Belair, Westminster, Ellicott City, Rockville, Snow Hill, Pocomoke City, have no local boards of health.



Showing the comparative importance of some preventable diseases in the mortality of Maryland since July 1st 1898.

The "Consumption column includes all forms of tuberculosis.

"If you will give me any information at your disposal I shall receive it as a help toward the general welfare. Typhoid has been epidemic here, and I consider it in this case criminal."

Whoever can read such a letter as this without grief, or reflect upon it without indignation, wants equally a human heart and an enlightened conscience. The words "criminal neglect" used by our correspondent, whether or not justly applied in the particular case, are the words of sober justice in relation to nine-tenths of the typhoid fever in Maryland. Some hundreds of families were similarly outraged during the year, while the citizens who did not die, though assailed, number some thousands. When there are a thousand persons as plain spoken as Mr. E., the barbed and pointed phrase "criminal neglect" will be driven into some sensitive portion of the body politic.

The following diagram illustrates the rank which typhoid fever holds among the preventable causes of death in Maryland, as shown by the returns of death for the last six months of 1898. The returns of Baltimore are not included in this chart. Tuberculosis, which overtops all other diseases, includes, besides "consumption of the lungs," all the other forms of tuberculosis, (joints, bones, intestines, meninges, Pott's disease and scrofula.)

The figures on which this diagram is based are by no means full, and errors are manifest in some of the twenty-three separate reports. It is quite clear, however, that the relative importance of the diseases listed here is about correctly shown. Some of the local returns show marked variations from this order, but when combined, the results conform closely to those obtained in older registraton States.

The following counties returned more deaths from typhoid fever than from tuberculosis: Caroline, Charles, Dorchester, Kent, Montgomery, Prince George's, Somerset.

The following counties returned more deaths from typhoid fever than from infantile diarrhœa: Caroline, Charles, Dorchester, Garrett, Harford, Montgomery, Prince George's, Somerset, St. Mary's.

It is by no means to be inferred that these counties are pre-eminently infected with typhoid fever. No part of Maryland can claim any distinction in this respect. Typhoid is annually epidemic throughout the State. If the returns were full and complete the absolute measure of the typhoid rate would not be shown, for a considerable number of deaths really due to typhoid fever are concealed in other parts of the record. For instance, the column marked "malaria" represents erroneous diagnosis in about four-fifths of its height. In this latitude, malaria is not more fatal than measles. At least half of the height of the malaria column should be added to the typhoid column. Of the adult deaths ascribed to diarrhœal disease, a considerable proportion are really due to typhoid fever, and the same may be said of a small percentage of the returns under "pneumonia." On the other had, in the "typhoid" column, as it appears, there are very few errors. The general practitioner in this State seldom mistakes a marked case of any other disease for typhoid fever.

When the clinical features of typhoid are not clearly distinguished, physicians are strongly inclined to use some vague term to express their diagnosis. Certificates received at the registration office bearing any of these doubtful expressions, such as gastric fever, slow fever, nervous fever, catarrhal fever, are entered in the colums which most nearly fit the reporting physicians' views of their pathology. Most of them go into the column of "undefined fevers." It is the policy of the office to enter everything precisely in accordance with the returns. There is, however no space in our schedule assigned to "typho-malarial" fever. All these cases go into the typhoid column. This is right, because the term expresses the physician's belief that his case was one of mixed infection with both typhoid bacillus and malarial parasite. If so, the typhoid infection is the more serious of the two infections, and death should be charged to typhoid fever.

Wicomico county reported in 1897, 112 cases of typho-malarial fever and but thirty-five cases of typhoid fever. In the same county, in 1898, thirty-three cases of typho malarial fever and eighteen of typhoid were reported to the health officer. These figures illustrate in some measure how far the actual prevelance of typhoid fever is underestimated. Out of 200 cases of typhoid fever occurring in two years, all but fifty-three escaped diagnosis. This error is not more frequent in Wicomico than in some other counties, where malaria is present. In the northwestern counties the physicians rarely make use of this misleading term.

As a matter of fact, typho-malarial fever has never been proven to exist in Maryland. If such a hybrid disease occurs anywhere in the United States, it should have been found in some of the soldiers returned from southern camps during the summer and fall of 1898. Opportunities to demonstrate mixed infections were sadly abundant in Maryland during the year, but proof was not offered that typho-malarial fever occurred in any case.

One of the blessings disguised under the appalling sacrifice of human life in the military camps is the great popular awakening to the pre-eminence of typhoid fever as a cause of untimely death in the United States. Maryland is fortunate that no part of this gruesome demonstration was made upon her soil. It would have been as beastly well done here as elsewhere.

Reporting last year upon the typhoid fever inquiry, I offered 880 deaths as the lowest, and 1,240 as the highest estimate one could reasonably make from the available data. The reports during the last six months strengthen me in the belief that our annual sacrifice to typhoid fever lies between those two figures. It is to be hoped that the returns for 1899 will demonstrate in a convincing manner the magnitude of this most unnecessary waste of human life.

Increased attention to public water supplies on the part of municipal authorities is one of the hopeful signs of the times. The State Board of Health has had during the year a few opportunities to demonstrate in a striking manner the relation of typhoid fever to drinking water. These instances are found in the reports of the chemist and biologist. We have also aided many practicing physicians in their investigations of small outbreaks in families using private wells. With the spread of popular interest in these matters, typhoid fever may be expected to diminish.

Many persons, who habitually use at home pure water, contract typhoid fever from the incidental drink of water obtained at a race course, fair ground, amusement park, or summer resort. These are the cases whose causes are exceedingly difficult to trace, since by the time the disease appears the trivial events of two or three weeks earlier have been forgotten. Our findings in two interesting groups of cases led us to believe that it would be well to study the water supplies of the various recreation and amusement parks throughout the State. The results will be found later in this volume. This work will make the proprietors of these places of public resort more careful of the water which they offer to visitors, and it is hoped that it will encourage people in search of vacation grounds to demand as definite information about water supply as about terms, accommodations, etc.

The practical extinction of typhoid fever could undoubtedly be accomplished by thorough disinfection of all the bowel discharges of all typhoid cases. This work would necessarily be done under the direction of practicing physicians. It is the duty of every physician to instruct every family in his professsional care concerning the infectiousness of typhoid stools, and the best means of disinfecting them. The spread of typhoid fever would be greatly restricted if this counsel were given in only the recognized one-third of the cases.

Infantile Diarrhoea.

This group of diseases, more fatal to children than typhoid fever is to adults, has not received from practical sanitarians the attention which it deserves. Municipal boards of health have moved against it with measurable success. While the mortality of infants from diarrhoeal diseases is always greater in large cities, our statistics show (probably correctly) that in Maryland, outside of Baltimore city, infantile diarrhoea ranks with typhoid fever; a formidable eminence. These diseases are almost all infections of the digestive tract, and preventable by correct feeding.

A preventive measure which has given excellent results is the prohibition by law of the sale or use of the long tube nursing bottle. No device for feeding infants is so certain to become infected or so difficult to disinfect, and the mortality of infants from summer diarrhoea would be quite appreciably diminished in Maryland if it were impossible to obtain this dangerous contrivance.

The most important cause of these diseases is impure milk. In the regulation of the dairy industry in Maryland a distinct advance has been made during the past year. All dairy herds are now required to be registered, and are subject to inspection by the Live Stock Sanitary Board, who have authority to enforce proper lighting and ventilation of dairy stables. It is unfortunate that the Legislature did not also empower the Live Stock Board to stop the sale of milk from tuberculous cows, and from cows improperly stabled and fed. Some of the abuses to be found in dairies in the vicinity of Baltimore are so gross that an account of them would seem incredible. The Sanitary Live Stock Board has done much valuable work during the year, but the full benefit of its powers must to some extent wait upon popular enlightment concerning the relations of milk supply to the spread of infectious disease.

A series of observations made in 1897 by the State Veterinarian and the present biologist to the State Board of Health showed how easily pus infections of the udder may be spread from animal to animal, and how grave consequences may follow the use of the milk of such animals. Further observations by the same officials in 1898 have demonstrated the influence of food and stabling upon the same infections of milk. A full account of this work will no doubt be found in the next report of the Sanitary Live Stock Board. It is mentioned here because it is valuable for practical application in the protection of human health.

Systematic inspection of milk is practiced nowhere in Maryland except in Baltimore city. In Baltimore the inspection is about as thorough perhaps as the organization and equipment of the Health Department will permit, but until biological examinations are included in the data upon which the quality of milk is judged, this food product will continue to be the chief factor in the infant mortality of the city.

In such important towns as Cumberland, Hagerstown, Frederick, Annapolis and Cambridge, the quality of milk supply is never a subject of inquiry by the local authorities.

Diphtheria.

Diphtheria outbreaks have occurred in 1898 in all the counties of Maryland, but the disease has perhaps not been more widely prevalent than in previous years. The notable outbreaks have occurred in Baltimore city and at two or three places in Baltimore county, at Centreville, Upper Marlboro and Williamsport.

The unusual prevalence of diphtheria in Baltimore during 1897 left so many foci of infection that it seemed reasonable to anticipate serious trouble in the fall of 1898. The Health Commissioner directed against diphtheria all the force in his department available for that purpose. A special officer known as Inspector of Throats was appointed. Wherever diphtheria was reported, cultures were taken from the throats of all persons in the family, and this examination of throats was repeated at intervals until after disinfection of the house, when, if no cultures grew diphtheria bacilli, the restrictions upon the liberty of the family were all removed. In a few instances all the throats in certain public schools were examined, and by this means dangers were discovered which otherwise would have escaped detection. Antitoxine was liberally dispensed by the Health Department to physicians for use in indigent cases, and was also freely used by the medical officials both for cure and for immunization. A very striking demonstration of the value of antitoxine in the prophylaxis and treatment of diphtheria will be found in the forthcoming report of the Health Commissioner, in the account of the campaign of the department against diphtheria in 1898. It adds materially to the great weight of testimony that antitoxine is the pre-eminent contribution of science during this decade to the cure of disease. It has almost shorn diphtheria not only of its fatal effect, but of its power to invade the human organism.

Some smaller observations of other local boards of health testify to the same effect. The Cecil County Board of Health was the first local board in the State to furnish free antitoxine to indigent patients. In this, Cecil county anticipated Baltimore city, and, having done so at a time when antitoxine was very expensive, the fact reflects great credit upon that board. In Anne

Arundel, Prince George's, Queen Anne's and Talbot counties, antitoxine has also been used to some extent by the local boards.

Except Baltimore, Williamsport is the only town in the State which has encountered a large outbreak of diphtheria. A board of health was organized to meet the emergency, and after the pest had been driven out, the town fathers proposed at once to dissolve the board of health. This is a very much belated example of how the sanitary affairs of a city should not be directed. Williamsport would better have stood firm upon the skirts of civilization without apology.

Vaccination.

Early in 1888, the presence of small-pox in adjoining States, together with the mobilization of troops on a war footing, caused the State Board of Health to look with special solicitude after our defenses against small-pox. In May, all the local boards of health and the school boards were requested to pay particular attention to the vaccination of school children. For some years the provisions of the vaccination act had been neglected, so that in several counties very many unvaccinated children were admitted to the public schools. Even in those counties where certificates of vaccination were demanded by the school boards, there was reason to suspect that the certificates did not guarantee definite immunity to small-pox, since many physicians were in the habit of giving a certificate at the time of operation, instead of waiting for the result. A proper form of certificate of vaccination was submitted to all the county boards of health and to the school boards as follows:

CERTIFICATE OF VACCINATION.

Public School No.—— *District No.*—— *County*——

This certifies that on——I vaccinated——with lymph obtained from ——, and that on——a typical vesicle, scab, or scar was present at the site of operation.

Signed........................M. D.
Address..........................

Teachers should carefully preserve all vaccination certificates. Those which do not report the presence of a "typical vaccine vesicle, scab, or scar at the site of operation," admit a child to but one year's attendance at school. At the beginning of another term revaccination should be done.

Successful vaccination, duly certified, admits a child throughout school life.

JOHN S. FULTON,
Secretary State Board of Health of Maryland.

Several county health officers were able to secure the adoption of this certificate by the school boards, but in some other counties no notice was taken of the suggestions of the State Board of Health. Late in the autumn the importance of the subject was emphasized by the increased prevalence of small pox in adjacent States, and a great deal of vaccination was accomplished, especially in the counties along the Pennsylvania line.

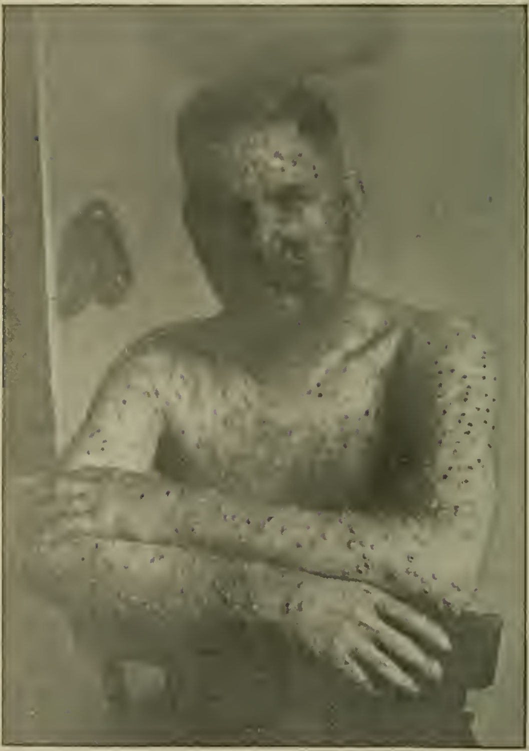
Small=Pox.

During the summer and fall no case of small-pox occurred in Maryland, though all the contiguous States were invaded. In July a suspect escaped from a hospital in the District of Columbia and went to St. Mary's county. He did not however develop small-pox. On December 22d an outbreak was reported near Hancock. I visited the place and found three cases, all in Fulton county, Pennsylvania, within two or three miles of Hancock. This outbreak and an extensive outbreak at Bedford, Pennsylvania, stimulated the authorities in the counties of Washington, Allegany and Garrett to great activity in vaccination. In the infected regions of Pennsylvania popular fear of small-pox sought comfort in the device, falsely imputed ostriches, but frequently practiced by men, of denying the presence of the disease and concealing the cases. In this stupid prevarication medical men complacently joined, and even seemed sometimes to take the lead. Physicians who made honest diagnosis, or expressed honest doubts, were for a time in popular disfavor. The influence of this moral perturbation was discernible in Maryland communities near the infected areas, and the Hancock physician, who promptly reported his case, had a taste of the displeasure of people who demanded of their prophets to prophesy smooth things.

It is not remarkable nor even discreditable, that competent and experienced physician should be in these days unable to recognize small-pox in the mild form which fresh outbreaks usually present. The triumph of Jenner has been so complete that the features of the disease are no longer familiar. But it is most discreditable to any medical man to mistake small-pox, throughout the course of a case, for any of those other eruptive diseases with which experience should have fully acquainted him. Yet epidemics of small-pox quite usually tread upon the heels of outbreaks of chicken-pox. One questions whether this frequent coincidence points more strongly to mental infirmity or to moral obliquity. Happily no Maryland physician has so far during the present small-pox crises manifested such a stigma.

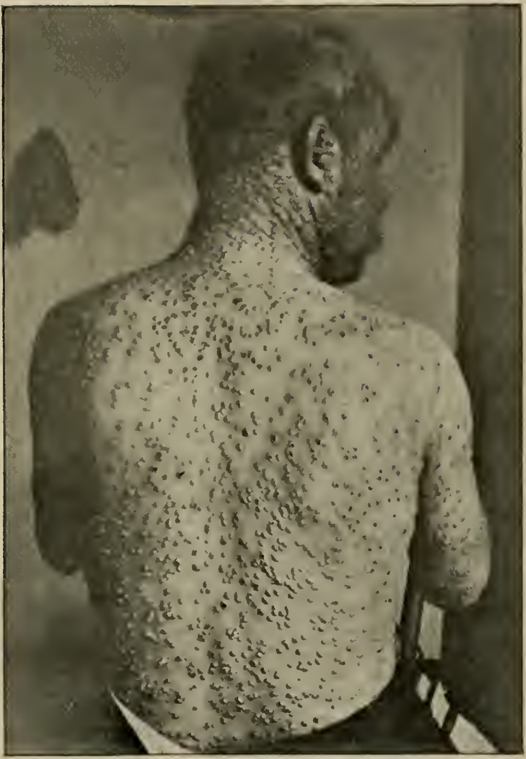
If it had not been embarrassing, it would have been amusing to observe how very familiar physicians suddenly became with *impetigo contagiosa*, a disease much rarer than small-pox, and never assuming anything like epidemic proportions. Photographs are here reproduced of a man who seemed to me to have

PLATE I.



SMALL-POX.—Crusting beginning on the face. Younger vesicles on the body showing umbilication.

PLATE II.



SMALL-POX —Back of the same patient. In all respects a characteristic picture of discrete small-pox on about the fifth day of eruption.

small-pox, and to have infected a neighbor of about his own age with an equally characteristic eruption. My own diagnosis was upheld by the representatives of the State Board of Health of Pennsylvania, and by the officers of the United States Marine Hospital Service, but a Pennsylvania physician, who saw the second case at a later date, was brave enough to write to the Pennsylvania Board of Health declaring that his patient had *impetigo contagiosa.* These pictures are published as an excellent representation of the eruption in moderately severe attack of small-pox. The State Board of Health of Maryland expresses its thanks to the physician who made such an indisputable record at the most characteristic stage of the disease.

Late in December a case of small pox occurred at Hagerstown in the practice of Dr. J. McPherson Scott, health officer for Washington county. In a rich experience Dr. Scott had never seen small-pox, yet he recognized this very mild case, and happily for the community was able to isolate it at once. A second case happened in the same house, but the outbreak was cut short at that point, and the incident caused scarcely a ripple of excitement in the community.

Tuberculosis.

This prime minister of death far outranks our other enemies and we have grown so accustomed to its preeminence as not yet to have gathered courage to assail it. Of all disease organisms the tubercle bacillus is the most widely distributed, and the most destructive of animal life. It has invaded all three grand divisions of the animal kingdom, being able to make for itself a favorable habitat in the warm bodies of birds, in the temperate blood of man and other mammals, and in the colder organs of fish and reptiles. To attack an enemy strong enough to hold so much territory is at first consideration an appalling venture. Since the bacillus may attack man through almost any of those lower animals by whose aid man maintains himself, man cannot effectively defend himself unless he also makes war upon the tuberculosis of animals.

Both in man and animals tuberculosis is a disease of very long duration, so that each infected individual, whether man or animal, is a focus of infection which cannot be summarily dealt with during life. On the other hand the ability of the animal organism to withstand the ravages of the tubercle bacillus for long periods show that the germ is not an energetic poisoner, but that it overcomes vital resistance rather by repeated assault in large force, and with the aid of those other germs which rush into any weakened animal tissue, than by reason of its own essential virulence. It is believed that this germ is a strict parasite, that is, that it is unable to maintain itself outside the bodies of men or animals. In its resistance to conditions outside the body, (temperature, light and moisture) it ranks as one of the feebler non-sporulating organisms.

There is much then to encourage the hope that effectual means of restricting the spread of tuberculosis will be available whenever we are agreed to test such means upon a large scale. Every animal known to be infected, should be killed at once, and the body destroyed by heat. This seems to me the very first and most important step in a fight against tuberculosis. Such animals are unfit for use as food, or for the production of food. They are of no value whatever, while their destruction removes at once a focus of infection. This measure has been tried in some of the Northern States, but, it must be confessed, with indifferent success. It has been an enormously expensive process, and has not been carried far enough to produce measurable effects upon the health of domestic animals.

A bill was introduced at the Maryland Assembly in 1898, designed to empower the Live Stock Sanitary Board to do similar work here, but it was defeated. Its chief opponents were the dairymen, who believe that cattle having light infections of tuberculosis, discoverable only by Koch's tuberculin test, are not so dangerous, either to human health or to the health of the herd, as to justify their destruction. It was also contended that tuberculous cattle may be of value as breeders. Some of the dairymen were surprisingly well informed upon the question of infectiousness of milk from tuberculous cows. The attempt to secure this legislation, though it failed, showed that the solution of the problem may eventually be reached with the aid of the stockmen. The best of them realize fully the value to their industry of legal measures, which will protect their herds against tuberculosis, and it only remains to learn how the State may remove tuberculous cattle without inflicting any outweighing injury upon the dairy industry.

The class of dairymen who most oppose such measures are those whose business principles are of the lowest grade, who house and feed their cattle with a single view, viz., the utmost possible production of the cheapest milk. Against the inhuman methods of this class of dairymen there is already some law, and the Live Stock Sanitary Board is moving against them vigorously.

The customary outlet for the unprofitable stock of the worst dairies is the abbatoirs. The State Board of Health has the legal power to condemn meat which is unfit for human food, but has no means of destroying such meat under official supervision, so that much of it no doubt reaches market by indirect routes. There are so many slaughter houses in the State that an inspection of even the large ones is impossible. When the inspections have been confined to one of the largest abbatoirs daily during considerable periods of time the effect of the supervision upon the quality of stock slaughtered has been by no means striking.

The Food Inspector of the State Board of Health spent forty-five days in the Claremount Abbatoir, between February 11th snd April 27, 1898. A resume of his report shows that he inspected:

Beeves	14,096
Sheep	34,658
Hogs	122,456
Calves	3,111
Total	174,024

Among these there were gross, naked-eye evidence of tuberculosis in seven, and lump-jaw in fourteen beeves; and in sheep twenty-one cases of gid. Such a great number of cattle could not have been inspected by one man except in the most superficial manner, so that the number of diseased animals discovered must have been a small fraction of the number really present. In the same period 2.203 carcasses were inspected, and among these gross appearance of tuberculosis were found in the livers of 174, and in the lungs of 80 animals. These examinations were superficial inspections of the organs without the aid of a knife.

The spread of tuberculosis through infected meats is perhaps not very great, but the interests of the community demand that the meat of tuberculous animals should either be condemned to the fertilizer tank, or prepared and marketed under certain restrictions.

Against the spread of tuberculosis by infected human beings much can be done. Tuberculous persons should be excluded from certain occupations. No consumptive should be employed as milker in a dairy. An instance has come to the attention of the State Board of Health of a dairy stable in which the milkers were found living with the cattle both by day and night, sharing tuberculosis and everything else but food. The cattle coughed a great deal, but the men did not cough while we were present.

The School Board of Baltimore city has made a rule which requires all applications for employment as teachers to be accompanied by a physician's certificate that the applicant is free from tuberculosis.

The infectious material escaping from the bodies of consumptives should be destroyed or rendered harmless by disinfection. This may be pus from a tuberculosis joint, or in another case it may be the intestinal discharges, but in the vast majority of instances it is sputum from the lungs. A very important means of controlling the spread of tuberculosis therefore is the prohibition of spitting in public places. Attempts have been made in several communities to stop expectoration upon the streets, in public conveyances, and in puplic buildings. In Baltimore an ordinance has been passed chiefly through the efforts of the United Women of Maryland prohibiting spitting in street cars. Up to this time no violation of this ordinance has been punished, but the presence of the placards in the cars has a certain educational value, and serves to keep persons reminded that indiscriminate spitting is a dangerous as well as a dirty habit.

The cardinal principle in the management of infectious disease is to isolate the cases, and to restore them to health as rapidly as possible. In dealing with tuberculosis this would be an enormous undertaking for the State. Nevertheless it would, I believe, be profitable. Evidence, rapidly accumulating, shows that tuberculosis is a curable disease, and that the means of curing it are not so inaccessible as was formerly supposed. Many sections of Maryland furnish as favorable climatic conditions as are needed for the establishment of sanatoria, where comsumptives could receive such medicinal and hygienic treatment as has proven value. State sanatoriums would not only remove a large number of infectious individuals to places where they could do little or no harm, but it would also restore a certain number of them to health and earning power. Residence in a sanatorium would be profitable to the State if it lasted no longer than until each individual should learn how to take care of his own sputum, and so render himself quite harmless to others. A single sanatorium, no matter how large or well conducted, would not be as efficient as a series of sanatoria; each devoted to the care of a special class of cases.

The sanatorium treatment of consumption is at present attracting much attention, both from scientific men and philantrophists. Whatever plan society may adopt in defense against tuberculosis, special hospitals are certain to be the most important feature of the management of human tuberculosis.

The isolation of consumptives in prisons, asylums and other public institutions is not difficult, and would certainly tend to prevent the spread of infection. While superintendent of Spring Grove Asylum, Dr. George H. Rohe practiced isolation of tuberculous patients, and taught most of them to be careful of their expectoration. The results, as shown by his statistics, were very encouraging.

Since many tuberculous persons are well enough to pursue their avocations, and since it is not desirable to restrict their freedom of movement, it is practically impossible to follow every moving propagator of this disease by public disinfection. It is, however, important to disinfect every house in which a tuberculous person had died. It is doubtful whether the State would be wise to require notification of cases of tuberculosis by physicians. Where such a law has been tried it has resulted in the concealment of cases, and in the open hostility of medical men to such an ordinance. But the notification of death from tuberculosis provokes no such objection, and if it were the practice to disinfect houses after death from consumption, popular intelligence would begin to inquire whether occasional disinfection of houses during illness from tuberculosis would not be profitable. Such has been the history of disinfection after tuberculosis in Rome, Italy. There it is quite customary for households to request the services of a public disinfector at intervals during the progress of a case of consumption.

Public conveyances contribute much to the spread of tuberculosis, and of these the most dangerous is the sleeping coach. While railroad companies are probably not opposed to such a measure, they are not likely to disinfect all sleeping coaches at the end of each run, unless they are required to do so by law.

It would be impossible in the space at present available to sketch even the barest outline of an organized fight against tuberculosis. Some suggestive papers on the subject have been read at the Maryland Public Health Association, and abstracts are to be found in the appendix to this report.

A single small hospital in this State is devoted to the care of consumptives. This hospital, located in Baltimore city, has done exceedingly well with the means at its disposal, but the demands upon it have been quite overwhelming. The directors are now seeking for a location in the country, where they hope to illustrate on a very small scale the work which the State can and should conduct in the most liberal fashion.

No attempt of modern sanitation can in magnitude, in variety of details, in breadth of organization, or in beneficence of results equal a well matured plan of campaign against the "Great White Plague."

Maryland Public Health Association.

This association of persons interested in public health has, in the second year of its history, increased in strength and influence. A very successful meeting was held in May, 1898, in Baltimore. Probably the most notable event of that meeting was an address by Col. George E. Waring upon the sanitary treatment of waterborne wastes, a very timely topic for Baltimore. This was one of the last appearances of this distinguished sanitary engineer upon the lecture platform. Shortly afterwards, Col. Waring went to Havana as a sanitary expert for the United States government, and within a few days of his return died of yellow fever, on the 29th of October, thus terminating a career of very exceptional distinction and usefulness.

The address of Col. Waring to the Maryland Public Health Association is printed in the appendix to this report, together with an abstract of the other proceeding of the Association.

In October the semi-annual meeting of the Association was held at Easton, where the society met with a hearty welcome, and, it is hoped, stimulated a lasting popular interest in sanitation.

In November a special meeting was held in Baltimore to discuss public baths. On that occasion Honorable Josiah Quincy, Mayor of Boston, with Mr. Daniel Kearns, the secretary of the Boston Department of Baths, and Mr. Franklin Kirkbride, secretary of the Public Baths Association of Philadelphia, lectured upon the public baths in their respective cities. Papers were also read by Dr. Louise Erich and Dr. H. O. Reik, of Baltimore, and a resume of the work of the Mayor's Committee on Free Baths in Baltimore was given by Mr. Eugene Levering.

The State Board of Health has been unable to give space in this report to this very interesting special meeting.

A particularly encouraging feature of the work of the Maryland Public Health Association is the lively interest manifested by the public school authorities. In the membership, teachers and public school officials are second only in point of numbers to medical men. In attendance at the meetings teachers preponderate over all other classes of citizens. In the prominence given to school hygiene the programmes testify that the response of the teachers to this movement has been very hearty. That the influence of these meetings is rather widespread is shown by the fact that there has been an unusual demand during the year for talks upon hygienic subjects at the Teachers' Institutes in several counties. In Calvert, Howard, Harford, Cecil, Carroll, Washington, Queen Anne's, and Allegany counties spirited discussions upon various problems of school hygiene have occurred at the annual institutes.

The report of the Arundell Club on the Sanitary Condition of the Public Schools in Baltimore, at the fall meeting in 1897, attracted very widespread interest, and is believed to have aided in bringing about the reforms which the present inspector of Buildings of Baltimore city has been able to accomplish.

Another fruit of these deliberations of the Maryland Public Health Association was the presentation of a paper and a set of drawings for one-room country school houses by Mr. Henry Brauns. This was a generous response to the inquiries of country school teachers for advice about the application of sanitary principles to their own narrow conditions. Several requests for copies of these designs have been sent to Mr. Brauns. This paper, with that of Dr. August Stabler on "Ventilating Small School Houses," has been reprinted from this report for distribution.

At the Easton meeting the secretary of the State Board of Health offered the suggestion that one school day in each year might profitably be set apart for a practical object lesson in sanitation. For want of space the paper in which this suggestion was made does not appear in the appendix to this report, but the idea is reiterated here in the hope that it may find favor. It is not meant to add another to the list of holidays, already too long, but to designate one day in each school year as Sanitary Day, and to devote it to some such exercise as will impress upon the children the value of the sanitary works and official labors which are undertaken for the protection of human health.

It is hoped that the beneficient influence of the Maryland Public Health Association will soon be exerted to introduce into the public schools methods of teaching hygiene to children far better than are now to be found. The text-books in use could not be better designed to impart the least information in the most time. The most important part of hygiene relates not to personal but to public health, yet the text-books contain no reference to public sanitation. Michigan has a law giving a place to public hygiene in the scheme of instruction in the public schools, and requiring the State Board of Health to furnish leaflets for that purpose.

Very respectfully,

JOHN S. FULTON, *Secretary.*

Dr. George H. Rohe, president of the Maryland Public Health Association, died suddenly at New Orleans, La., on Monday, February 6th, 1899. Dr. Rohe was also president of the American Public Health Association. A man of extraordinary versatility, he enriched the literature in several departments of medical science, and possessing both executive force and great personal charm, he was honored in his life by a number of medical and philanthropic societies. Contributing so much and in so many directions, Dr. Rohe will be missed on every side, but nowhere more than in the councils of the Maryland Public Health Association.

REPORTS OF LOCAL BOARDS OF HEALTH.

COUNTY BOARDS.

ALLEGANY COUNTY.

Cumberland, Md., December 31, 1898.

Dr. John S. Fulton, *Sec'y Board of Health.*

Dear Sir: I have the honor to submit my report for the current year.

In the matter of vital statistics I would state that since July 1st there have been reported 105 deaths and 262 births.

Regarding contagious diseases I have had reported: five cases of mumps—three near Lonaconing and two at Mount Pleasant. No deaths.

Seven cases of whooping cough at Moscow, with two deaths, and one at Lonaconing, resulting fatally.

One case of diphtheria at Moscow, with recovery.

Eleven cases of typhoid fever at Lord, three at Lonaconing, two at Barton, and one at Moscow, all of which recovered.

Three cases of scarlet fever at Ellerslie and one at Rawlings, with no deaths.

A report of an extensive epidemic of small-pox, at Bedford, Pa., near this city, gave us some alarm. Stringent measures were taken to prevent the disease reaching this city, and at this writing all danger is past.

A number of minor nuisances were investigated and corrected without difficulty.

The general health of the county can now be pronounced very good, with the exception of an epidemic of la grippe, which is of a light character, although very prevalent.

Respectfully,

C. H. Brace, M. D., *Health Officer.*

ANNE ARUNDEL COUNTY.

Annapolis, Md., December 31, 1899.

Secretary State Board of Health:

Dear Sir: March 18th William Sims, negro, about fifty years old, was reported to me as in a dying condition of some contagious disease about three miles from Annapolis. I found him moribund with pneumonia. He died the next day, not having during his sickness either medical attention or medicines, all of which are provided by our board in needy cases.

June 14th, Wm. Duval, fertilizer manufacturer, about one mile from Annapolis, was reported as maintaining a nuisance. An inspection of his premises found them as clean and free from danger as possible.

Four cases of prisoners, confined in the county jail under flimsy charges, were examined into, released and sent to their homes. This novel duty of the health board was forced by many considerations. The county is large, and jail old and small. Every prisoner added to an overcrowded cell was dangerous, and investigation frequently demonstrated that prisoners were sent to jail to have their sickness cured and wounds dressed, rather than for any special crimes against the State. As there was no officer and no fund to provide for such conditions, our board assumed the responsibility and expense, and secure every such prisoner's release as early as possible, send them to their homes, fresh air, sunshine and freedom, and believe it to be to the best interests of the community and the State.

Four insane paupers have been sent to hospitals, and this means that hard work was demanded of the board to secure the end. Formerly months and years were sometimes required to get an insane pauper "out of jail" and "into a hospital." We have given especial attention to this needy and deplorable class of prisoners, and have demonstrated to the officers of the law that the "health" of the insane and the "health" of the prisoners not insane, both demand speedy trials of dements. Under our improved methods a few days only are required to get a dement before a jury, and when found insane is immediately sent to a hospital.

Six hundred school children unable to pay were vaccinated.

Three mid-wives have registered under the new law.

Dr. John B. Robinson, of Brooklyn, reported six cases of diphtheria.

December 3d, Dr. George T. Dent, Churchton, reported four cases of typhoid fever, all negroes.

December 8th, Dr. T. W. Linthicum, Savage, Md., reported a case of ophthalmia in an infant under the care of Minti Bowie, mid-wife, (colored.) She was immediately notified and provided with the law upon the case, and her practice will be watched.

December 24th, Dr. C. L. Nuckols reported a case of diphtheria, child four and one-half years old; used antitoxine; child convalescent.

Another child, aged twelve, was immunized by Dr. Nuckols, who kindly did the work for me, our board furnishing the antitoxine.

Respectfully,

J. M. WORTHINGTON, *Health Officer.*

BALTIMORE COUNTY.

December 29th, 1898.

To the Secretary to Board of Health of Maryland:

I have the following report to make: Our county has been unfortunately visited by quite a number of diseases during the past year.

One reason for the large number is that the county of Baltimore, contains a great population. Another is we border on the great city of Baltimore, where more or less disease is always to be found. Some cause has been attributed for quite a number, but in many cases it is quite difficult to locate any good cause for the same.

There are a number of sporadic diseases which are to be found in quite isolated spots in the county, and why they should exist in such healthful locations is more than I can describe. Divine Providence is the only interpreter.

It is said that filth is the cause of many, but throughout the large field which I have covered I find that the high and lowly suffer alike.

Diphtheria, one of the most dangerous to childhood, has largely prevailed.

The next is measles and whooping cough, epidemic in portions of the county.

Typhoid fever quite prevalent, but I am of the opinion that many cases have been confounded with intermittent fever. At this present time of sending this report, we are having an epidemic of la grippe of a mild form. No cause has been attributed for its existance, and but few deaths have occurred from the same.

Nuisances I find to be quite prevalent, but hard to eradicate. The populace will have to be educated as to what is a nuisance. What it may be to one is nothing to another. The only way in which a nuisance can be eradicated is for the board of health to have the power to put it in condition at the expense of the property where it may exist. The State's attorney, I believe, has said that it takes five witnesses to prove a nuisance, so we can hope for little from the law.

Schools that have been visited and examined have been found to be in deplorable condition in many respects. The out-buildings are so badly kept that it is a disgrace to have children use the same. Parents provide all comforts at home, and nothing seems to be provided for the comfort and health at many of our schools.

The vital statistics have been put in force and a fair return made, but there seems to be some objection on the part of the physicians to comply. The city physicians who practice in the county have not made any reports.

The practice of medicine illegally in the county is on the increase.

Mid-wives have fallen greatly into the practice of medicine. There should be a law governing the practice of mid-wifery, as there are a great number of very incompetent persons pursuing this vocation at the expense of the public.

The office of the Secretary to the Board of Health of Baltimore County is becoming a very cumbersome one. The work is largely increasing each year. The salary is very inadequate for the amount of work to be done. There is not sufficient salary to enable a physician to devote all his time to the work, and many times important matters go neglected. There are about one hundred practicing physicians in the county. Some of them live in obscure places and hard to reach. The secretary receives nothing for travelling expenses. At times it is necessary to travel a distance of forty miles to examine some complaint or case of disease, which consumes much time and a great amount of labor. It is also necessary to answer all correspondents and keep a record of the statistics of the births and deaths.

I will now give a brief report of the number of cases examined since May 1, 1898:

Diphtheria, thirty cases; typhoid fever, fifteen cases; scarlet fever, fifteen cases; nuisances, twenty-five cases; public schools examined, ten; public schools disinfected, six; wells examined, twelve; night soil nuisances, three, prosecuted and dismissed for lack of evidence—five witnesses necessary to prove nuisances; persons arrested for maintaining nuisances, six, all dismissed for lack of evidence; houses disinfected, forty-five.

A special man should be employed to examine nuisances and do the disinfecting under the supervision of the Secretary to the Board of Health.

Respectfully submitted,

J. Calvin Schofield, M. D.,

Secretary to Board of Health of Baltimore County, Md.

CALVERT COUNTY.

DUNKIRK, January 2, 1899.

The careful attention given to its work by the Board of Health has won the approval of the public.

With this favoring sentiment important improvements in the sanitary condition of many localities, especially in the villages, have been made without opposition.

Diphtheria was brought into the county twice, and scarlet fever once, by persons on visits to friends in the county, but there was no spreading of either disease.

The attending physicians required strict isolation of the patients, and there was thorough disinfection of the premises where the diseases occurred.

There have been seventeen cases of typhoid fever, with three deaths.

Every physician in the county reports promptly to the Local Registrar of Vital Statistics.

The physicians have otherwise materially assisted in this work. While quite sure that the reports are not complete, I think the law to secure the vital statistics is as well observed in this county as possible, considering the recent date at which it went into effect, and the fact that many who are charged with duties under it, are not able to read. There is no opposition to the law.

T. M. CHANEY, M. D.,
Secretary Board of Health, Calvert County.

CAROLINE COUNTY.

January 4, 1899.

DR. JOHN S. FULTON, *Secretary State Board of Health.*

DEAR SIR: Some of our physicians fail yet to appreciate the importance of the "Vital Statistics Bill," and have not made full reports, hence my incomplete report. Have received reports of twenty-one deaths, and the same number of births, but think the report will be doubled for both when complete. The health of the people of the county has been good except in a few localities. No general epidemics have occurred, except measles and typhoid fever in the lower part of the county—the latter in the vicinity of Preston, more cases having occurred in this town than in its previous history. Dr. Fulton was summoned here to ascertain if possible its cause. The water did not prove the scapegoat in all cases, as most of the drinking water is from artesian wells, and pronounced good both by the analytical chemist and bacteriologist.

Three open wells were condemned. This scourge at the close of the nineteenth century enlists the thoughts and investigations of the best minds, and there is yet room both as to cause and course. A few cases have occurred in other parts of the county. Diphtheria has broken out in various parts of the county and claimed a few victims, but a most rigid quarantine and antitoxine has checked it at once.

Scarlatina in a mild form has been reported from some places. Small-pox has made no invasion in our county for years, thanks to a general system of public school vaccination.

Much complaint comes from the people of "Canning house nuisances." The canning industry has grown to enormous proportions, but unfortunately, many engaged in it have neglected sanitary regulations; refuse matter is allowed to accumulate, ferment and pollute air and water, Heaven's bounty, which must be protected for the public health. Our local board will pass an order to regulate this in the future.

Very respectfully,

J. L. Noble.

CARROLL COUNTY.

Dr. John S. Mathias, Secretary. No report.

CECIL COUNTY.

Elkton, Md., January 4, 1899.

Dr. John S. Fulton, *Secretary State Board of Health.*

Dear Doctor: Regular monthly meetings are held on the second Wednesday of each month.

The Town Councils are co-operating more freely with the board, and while we have no comparative statistics, there is no doubt that the health of the towns is appreciably better than it was one year ago.

Quite extensive drainage has been effected. particularly in Elkton and Chesapeake City. A branch of the Maryland Public Health Association was organized in Elkton in April, and a Town Improvement Society is doing good work in Port Deposit.

The towns, except Perryville, have been unusually free of typhoid fever, but it has prevailed rather too frequently, and with a high mortality in the country districts. The board has investigated all reported cases, and the statistics will be used for preventive instruction next year.

Diphtheria has caused some alarm in certain sections, but the total number of cases is probably less than former years, and the death rate has been remarkably low. The board furnished antitoxine to indigent families.

The physicians as a rule are reporting births and deaths, but there are still some derelicts, who give assurance that they will comply with the law. Although blank forms on postal cards for the notification of infectious diseases have been furnished for the convenience of physicians, but very few of them are giving the aid that they should to the board, which is making an effort to keep a complete record of this class of diseases.

The School Board and its secretary are most excellant assistants in enforcing the vaccination law and adopting all possible precautions in preventing and limiting the spread of infectious diseases.

The newspapers of the county have published regularly the minutes of the meetings, and have otherwise freely rendered invaluable aid in the advancement of sanitary and public health measures.

HOWARD BRATTON, *Secretary.*

CHARLES COUNTY.

DR. CATALDUS P. POSEY, Secretary. No report.

DORCHESTER COUNTY.

DR. GEO. P. JONES, Secretary. No report.

FREDERICK COUNTY.

WOODVILLE, MD., January 2, 1899.

DR. JOHN S. FULTON, *Secretary State Board of Health.*

MY DEAR DOCTOR: My appointment as health officer bears date of August 16, 1898, and as I have no data at my command previous to my appointment, upon which to base said report, you will perceive the utter impossibility of my complying with your most reasonable request. Since my appointment to said office it has been my constant endeavor to secure the co-operation of all the regular physicians throughout the county in the interest of better organization, believing that a united effort on part of the profession in behalf of better sanitary conditions would reduce the percentage of deaths to the minimum, measurably banish epidemics, add materially to the health and happiness of the county, and lead to a better understanding between physicians and patrons as to the best methods of combating contagious diseases and preventing their spread. The dissemination of medical literature by the State Board of Health has had a salutary effect, noticeable in the more uniform observance of the rules adopted for the protection of persons exposed to the influence of contagion. Better sanitary conditions prevail in the rural districts. Isolation is being more uniformily enforced, and approved methods are rapidly gaining the confidence of both patients and attendants. Water for drinking and culinary purposes is less frequently contaminated by germs, the supply being more carefully guarded. Ventilation, a most potent factor in health and disease, is being better understood and appreciated; disinfectants are being more generally and intelligently employed. Since my appointment as health officer I have investigated four complaints, found nuisances in each case, and peremptorily ordered their abatement. All orders were complied with. Scarlet fever has made its appearance in several sections of the county, generally of mild type, with few deaths. Some cases of diphtheria have occurred. Antitoxine is being employed in its treatment, but few deaths have occurred. Typhoid fever, once the great curse of our fair land, is becoming less frequent, and usually of milder type, no epidemics having been reported. Measles have made their appearance, but have not interfered with the schools as formerly. No cases of small-pox reported. Vaccinations are receiving more attention. Serious objections are being urged, however, to compulsory vaccinations, which originated in the want of proper care and impure virus. I would suggest that virus furnished by the State should bear the date when points are charged, also a date after which their use should cease. The same is true of antitoxine, which should be furnished under the supervision of the State Board of Health free to regular physicians for the use of paupers. Stamped envelopes for making returns should be furnished by the counties.

All of which is respectfully submitted by—

David M. Devilbiss, *Health Officer.*

GARRETT COUNTY,

Oakland, Md., January 5, 1899.

Dr. John S. Fulton, *Secretary State Board of Health.*

My Dear Doctor: Below I send a *short resume* of my work as county health officer of Garrett county.

I took charge of this office on July 1, 1898. Including the birth and death cards sent herewith the total births reported up to date is seventy-four. Total number of deaths reported for same time, forty-five. We have had a few cases of typhoid fever, also some of diphtheria. A few cases of scarlet fever are reported by Dr. R. A. Ravenscroft, of Accident, two days ago.

Take the county over it has been exceptionally healthy. Now we are having some grip, yet I can say our county is in good sanitary condition.

Respectfully,

W. H. Ravenscroft, M. D.,
Garrett County Health Officer.

HARFORD COUNTY.

Dr. C. A. Hollingsworth, Secretary. No report.

HOWARD COUNTY.

Ellicott City, Md., January 2, 1899.

Dr. John S. Fulton, *Secretary State Board of Health.*

Dear Sir: During the year which has just closed we have had no epidemics. There has been less typhoid than usual. I have had reported three cases of diphtheria, but in neither one has there been any further trouble. We had more or less scarlet fever of a mild type during the whole year. Through the negligence of some of the teachers of the public schools I was compelled last spring to close one of the public schools, as there were a number of the pupils with measles, and the teacher was living in the house where two cases occurred. After a few weeks the troubles passed, and the school resumed. There has been less complaint during the year of nuisances than usual. The closet of the school in this town has been in a bad condition. I have tried to remedy the trouble, have suggested means to the trustees and to the school board of the county. They have promised a number of times to act, but nothing has been done. Our villages have been kept in better condition than formerly, hence we have had less sickness. Only two reports of typhoid fever have been made to me, but I hear there has been some typhoid fever in different parts of the county.

Very respectfully,

Thomas B. Owings,
Health Officer of Howard County.

KENT COUNTY.

Chestertown, Md., December 31, 1898.

Dr. John S. Fulton, *Secretary State Board of Health:*

In compliance with the law requiring secretaries of local boards of health to report annually to you, I beg to submit the following short synopsis of the work done during the six months I have been secretary and executive officer for Kent county.

The previous experience of myself as regards complaints, nuisances and requests for advice and assistance during the few years prior to eighteen hundred and ninety-five had made me expect to again be the recipient of like complaints. Such, however, has not been the case to near so great an extent as expected, though I am sure the same conditions prevailed. I hope before long to again get into such work and give such assistance as I believe will again help to improve the sanitary condition of the county, and by exciting an interest in matters hygienic enable them to help themselves.

I have had frequent communications from the public school teachers throughout the county asking for information and advice as to the admission of children from infected houses, the care and management of those already exposed, etc. In all these cases I have with pleasure given the desired information, and in various ways been of service to both teachers and scholars.

I have investigated and remedied nuisances and offensive conditions many times, some of which required great urging and considerable threatening, but fortunately none of them "the strong arm of the law." In this connection it might be well to state that the fear of securing their neighbor's enmity too often keeps those who are seriously inconvenienced from making proper complaints, though they are only too willing that the "health officer," under strict injunction not to tell who made the complaint, should brave the situation ; which of course he does.

The only nuisance of any magnitude of which formal complaint has been made is the presentation of a petition signed by householders and taxpayers (all of whom are near by residents) in the lower part of the town, asking that the sewer recently constructed by the town be carried sufficiently far out into Chester river, to prevent the possibility of offensive odors and the accumulation of sewerage in the docks and on the shores of private grounds. This matter has been placed before the Kent County Board of Health, and you, as the Secretary of the State Board, at the request of our board, visited our town and made the necessary examination, after which I again communicated with the town commissioners, though they have not honored us with a reply. In the meantime the sewer is in use. The cold stormy weather of winter came on, making it at least a difficult matter to finish the sewer. By the advice of our board I have placed the matter in the hands of an attorney, and unless the request or order of our board is complied with as soon as possible in the spring, we will sue at the April term of the Circuit Court for a mandamus, compelling them to do as both yourself and others have advised them would be the safest and most sanitary way of completing the sewer.

The action taken by the State Board requesting the School Boards of the State to require the uniform and specific certificate of vaccination struck me as so very good and important that I determined to make an effort to get the school board for Kent county to adopt it, which I am very glad to say they promptly did, as soon as its advantages were made known to them. They have ordered blanks to be printed like those recommended by you, which blanks will be put in my hands for distribution among the doctors of the county, along with which I shall send the circular from your board explaining vaccination, how best done, etc.

The enactment of vital statistics laws by the last Legislature requiring the reporting of all deaths and births to the local health officer, to be registered and kept by him for a month and then reported to you, imposes work on the secretary that in time is likely to be excessive. As the years go by the importance of vital statistics will be more and more recognized, and I believe the collection of same will be easier. As it now is some of the doctors are negligent, some tardy, though I am glad to say none defiant.

The mid-wives, of course, are not making many reports, though I do get some. It seems an easier matter to get certificates of birth than certificates of death. This could be remedied and made so effective that every death would be reported however obscure or humble the decased, if burial permits were required. I trust the next General Assembly will pass such a law.

I do not think it necessary to specifically name or enumerate all the minor acts of the secretary of our board, only to state that we believe the sanitary condition of our county is as good as it is likely to be, so long as people disregard the laws of health and persist in thinking, living and acting in such a manner as to create conditions that are bound to result in illness, local epidemics, etc.

The frequent call made by me on your chemist for examination of drinking water, coupled with the number of cases of typhoid fever in Chestertown and throughout the county, all go to show the correctness of the above statement.

The privilege of sending bacteriological specimens to the bacteriologist of the State Board has been taken advantage of a number of times. The reports when received have in several instances cleared up doubts, and in one instance was unquestionably of service to the public, proving as it did the presence of diphtheria, the attending physician having already so called it, only to have his diagnosis questioned and doubted. The matter was referred to me, whereupon I at once closed a public school and quarantined two families for several weeks.

I am unable to get the physicians to report contagious diseases as they should. I am greatly in hope, however, by carefully and persistently following the course I have adopted, that after another six months or perhaps a year shall have passed they will all be in line and making prompt and early returns of such cases.

I also hope to get private citizens to understand and appreciate the necessity of sending me such notices when contagious or infectious diseases occur in their families.

I do not believe we have had more than the usual amount of sickness in Kent during 1898, though just at this time, like all other sections, we are held by the prevailing influenza, against which there seems to be no preventive course. The present epidemic of grip is not as severe as others, though it is very general.

Below is given the number and names of contagious diseases reported. I am sure, however, there should have been more, as I know a number of cases of typhoid fever and two cases of what was said to be scarlet fever. I also append the number of deaths and births as reported to me since July 1, 1898.

Contagious and infectious diseases reported between July 1, 1898, and December 31, 1898: typhoid fever, 36; scarlet fever, 8; diphtheria, 6; chicken-pox, 2; mumps, 1. Death certificates, 68. Certificates of birth, 112.

Very respectfully,

W. Frank Hines,

Secretary Local Board of Health for Kent County.

MONTGOMERY COUNTY.

January 9, 1899.

Dr. J. S. Fulton, *Secretary State Board of Health.*

Dear Sir: In May last I was appointed secretary to county Board of Health.

In June there was complaint from Kensington that the scavenger did not move the excrement far enough from the town. I visited the place and found it was carried to a farm, three-quarters of a mile (at the request of owner) who had vats prepared, mixed with plenty of earth and coal ashes, and as soon as dry spread on land and ploughed under. I thought there was no just cause of complaint and so reported to Mayor.

In July there was complaint of a slaughter house in Cedar Grove. I found green hides and refuse meat in the sun, producing a terrible stench and dangerous to the health of the town. It was promptly closed.

Dr. V. H. Dyson of Laytonsville, reported fourteen cases of diphtheria from November 11th to December 16th. Seven of them were of very grave type, the others of milder form; ages from two and a half to nine years, the first case among the poorer class of colored people. Two and a half miles from Goshen and from there half a mile to a colored settlement, called Seatertown, where he came in contact with most of his cases. Had no case after December 16th; all the cases among the colored class. He had three deaths, which were reported to State board at the time.

He used antitoxine in two cases, which were of grave type. Both recovered.

White and colored schools were closed.

The health of the county is generally good.

Respectfully submitted,

E. E. Stonestreet.

PRINCE GEORGE'S COUNTY.

Croom, Md., December 31, 1898.

In submitting my report for 1898, I would say that our county was not, to any extent, visited by any infectious or contagious diseases, until about June 1st, when we had an outbreak of diphtheria among the colored families around Upper Marlboro, which afterwards extended to some of the whites, especially westward towards Forestville, Spalding's district. With great difficulty its spread was checked, owing, no doubt, to several causes, the principal of which was that some of the physicians failed to report at once, allowing those families infected to communicate with others. It was also difficult to get the colored people to keep quarantine regulations without constant watching. There were in all about twenty or twenty-five families infected (mostly colored) before it was gotten under control, with quite a number of deaths. We had great difficulty in having some of the dead from the disease buried, there being no regular undertaker in the town of Upper Marlboro. Antitoxine was used freely to immunize, with very gratifying results. In fact, not until antitoxine was used did the disease begin to abate.

Typhoid fever was prevalent more or less all over the county, a few cases here and there. In no locality that I have reports of did it assume the form of an epidemic except at the House of

Reformation for Colored Boys, at Cheltenham, where fifteen or more boys were affected at one time. We were unable to trace cause of its spread at that institution. The secretary of the State Board of Health, Dr. Fulton, visited the premises and carefully looked it over, but was also at a loss (after carefully analyzing water supply) to know cause other than a very dry season.

Have had reports of a few cases of scarlet fever in different parts of county, but no great spread.

The vital statistics for county have been incomplete owing to a few of physician sand mid-wives not sending reports, and cannot be complete until all physicians co-operate.

The sanitary conditions of county are in splendid shape, as far as I am able to judge.

W. H. Gibbons, M. D.
Health Officer for Prince George's County.

QUEEN ANNE'S COUNTY.

January 1, 1899.

John S. Fulton, M. D., *Secretary State Board of Health.*

Dear Sir: I have the honor to present you herewith a hurried resume of my work as health officer for Queen Anne's county, beginning May 1, 1898, to January 1, 1899, covering the period of my present incumbency.

Physicians engaged in the practice of their profession who live within the confines of the county number twenty-six (26.)

Physicians living contiguous to the border lines of this county (but not within it) but practicing within my jurisdiction, four (4,) as far as heard from.

Of this number only eleven have complied with the requirements of the law touching vital statistics or infectious and contagious diseases.

There have been reported to me fifty-six (56) deaths and ninety (90) births during the period, all of which you will find by reference to my previous returns.

Except scarlet fever and diphtheria, no cases of contagious or infectious diseases have been reported, while typhoid fever, tuberculosis, whooping cough, measles, mumps and la grippe have appeared from time to time in different parts of the county.

Cases of scarlet fever reported—white 28, colored 6; total 34.

Cases of diphtheria reported—white 15, colored 5; total 20.

These figures show clearly that my reports are very imperfect, otherwise the records would disclose a much greater number of colored cases than appear. There is a lamentable lack of interest and attention upon the part of the physicians of the county regarding this important matter. I know no means by which this state of affairs can be corrected unless the enforcement of the legal penalty will effect it.

> "The best critics in the world are they
> Who along with that which they gainsay,
> Suggest another and a better way."

I confess that I am unprepared to see how this great defect is to be remedied. Statistics based upon such imperfect and incomplete date must be misleading rather than valuable instruction for any purpose.

In the discharge of my official duties I have inspected many of the schools of the county, have suggested changes and improvements where I thought them needed, and have corrected as far as I could all sanitary violations.

On account of scarlet fever and diphtheria, I found it necessary to have several of the schools closed for a short time.

Have examined and had analyzed by the State chemist several samples of the school waters, and from unfavorable reports thereon, suggested changes, etc., to the school commissioners.

The water supply of Centreville, at my suggestion, was submitted to State chemist for examination, and being condemned by him, the town commmissioners have ordered the immediate sinking of artesian wells. As soon as they are completed the present supply of water will be discontinued and the artesian water substituted.

I consider this an important step in the right direction.

The County Commissioners too have supplied me with the most modern and improved apparatus for the thorough and proper disinfection of all infected houses and localities, which I have used freely wherever needed.

I regard these moves on the part of the public officials as an evidence of an improving sense of the importance and necessity for proper modern sanitation, which is both satisfactory and encouraging.

I have in various ways endeavored to interest the physicians and the public of the county in general health matters by communications, letters, etc.

At the request of the superintendent of public schools, I prepared a paper on "School Hygiene," which was read before the "Teachers' Institute," which met here in September last. It has since been published in the county papers by direction of the superintendent.

The jail and almshouse have both received my attention, and have found them always in good condition and well and carefully kept.

I regret my inability at this time to go into details, but my time is now wholly occupied with the demands incident to a prevailing epidemic of grip, that just now holds the fort. This is the only report I can make thereon, (of the grip,) as it is too soon to state results. It is quite threatening, however. I was not aware until your notice of a few days ago that I was expected to make a report until May, 1899, at which time I would have completed the year as health officer.

I hope, however, I have given you enough points to show that I have not been entirely idle, and from which you can gather sufficient material to do justice to both the subject and to ourselves.

Very truly yours,

Jas. Bordley.

SOMERSET COUNTY.

No county board of health.

No report.

ST. MARY'S COUNTY.

Dr. L. B. Johnson, Secretary. No report.

TALBOT.

Easton, Md., January 1, 1899.

To the Honorable State Board of Health of Maryland.

Gentlemen: I hereby hand you my report of work done during past year, including collections of vital statistics since July 1, 1898.

Talbot county has fully upheld its reputation as one of the healthiest counties in Maryland. Our reports on contagious and infectious diseases have been made with great care, and in summarizing the cases at this time we find no epidemics to have existed, even in cases where everything was favorable to the spread of diseases, causes us to feel as though our efforts have not been altogether wasted.

Trouble is still experienced in the collection of vital statistics, and many cases of births and deaths are never reported until reminded by either the Local Board or your Honorable Body.

There have been reported to the local officer the following:

Typhoid fever, 20 cases; diphtheria, 9 cases; scarlet fever, 3 cases. Also since July first, 105 births, 84 deaths.

Very truly yours,

THOMAS A. COUNCELL, *Health Officer.*

WASHINGTON COUNTY.

HAGERSTOWN, MD., January 3, 1899.

DR. JOHN S. FULTON, *Sect'y State Board of Health.*

MY DEAR SIR: The closing year has witnessed an advance in sanitary affairs in Washington county. Individual interest and co-operation has been manifest upon various occasions, and justifies the opinion, and beginning to realize as they have not heretofore, that intelligent sanitation really means preservation of health, reduction of mortality rate, and protection of commercial interests. The County Commissioners, acting as the Board of Health, have with great cordiality and complete unanimity adopted the suggestions embodied in my last report, whereby the vaccine physicians—fifteen in number—have been appointed as advisory members of the County Board of Health. In the notice of their appointment these duties were thus defined: "The duty of district health officer shall be to carefully observe the sanitary conditions of his district, and when the existence of any condition imperilling health becomes known to him, to direct the attention of the property holder or tenant thereto, (as in his judgment may be most practicable) and request its abatement. If the request of the health officer is not complied with, it shall be the duty of the said health officer to report the case and attendant facts to the county health officer for such investigation and action as may be determined by the County Board of Health.

"In order to give effectiveness to recent legislation, relating to 'Notification of Infectious Diseases,' requiring all physicians to report such cases to the county health officer, the district health officer will cause to be placed on the house wherein an infectious disease may exist a printed placard, which will serve as a notice to the public of the presence of an infectious disease."

You will therefore note that Washington county is divided into fifteen vaccine districts, with a vaccine physician resident and practicing in each district, whose duty is to vaccinate indigent children who wish to attend school. There being no compulsory vaccination, this gratuitous work is only done that this class of pupils may suffer no hardship by the operation of the law excluding children from the public schools without a certificate of vaccination. The practical results are satisfactory.

The vaccine physicians in the discharge of their duty have discovered many defects in the operation of the law which, to a great extent, negative the vaccination which is being done at the public expense. Prominent among the defects thus observed, and the only one to which I shall at present direct attention, is the presence of children in the schools under the protection of a certificate of vaccination issued by a physician, but who have never been properly vaccinated. They have gone through the form. The arm has been scratched, the abraded surface supposedly charged with vaccine virus and a certificate of vaccination immediately granted. In many instances these "vaccinations" have been failures, yet the children attend school under the protection of a doctor's certificate. I am not aware that the law gives any one the authority "to go behind the returns" for the verification of the alleged vaccination, yet the injustice is glaring and practically nullifies the work of our vaccine physicians. Some means should be devised for excluding from school all who cannot verify their vaccination by possession of the characteristic vaccine cicatrix.

As a result of this service of district health officers the report of contagious diseases is as efficiently made as can be desired. The procedure is as follows: I have supplied every physician in the county with postal cards addressed to myself, printed thus:

"I herewith report a case of——in the family of—— living at——name——age——sex——color——."

Upon receipt of this card, I send the following notice to the health officer of district from which the case has been reported:

"You are hereby notified of the presence of a case of——in the family of——living at——reported by Dr.——. Please have suitable placard placed upon this house, as required by law, to remain thereon until the attending physician is satisfied that the public health will not be endangered by its removal."

Suitable placards have been placed in the hands of every health officer, and under the orders of the County Commissioners the constables of the respective districts post these cards, charging therefor the cost of serving a writ or summons.

At the same time the following card is sent to the Superintendent of Public Schools:

"You are hereby notified of the presence of a case of—— in the family of——living at——reported by Dr.——. Please notify the teachers in this school district to admit no one from the family without a certificate from the attending physician, that the danger of communicating disease has passed."

This official promptly complies with this request, and by the method thus presented, the presence of disease is reported, the house is placarded, and children from the infected household are immediately excluded from school. From September 1st to December 31st there have been in the county twenty-one cases of diphtheria.

During the same period there have been sixty cases of diphtheria in Hagerstown, which number could doubtless have been greatly lessened by proper effort to improve the sanitary conditions. During the year 1898 there were in Washington county forty-five reported cases of scarlet fever, of which forty were in Hagerstown.

During December the presence of three or four cases of smallpox in Fulton county, Pennsylvania, about four miles north of Hancock, caused great anxiety and fear of invasion of this section of our county. I have distributed, under direction of the County Commissioners, vaccine virus to the physicians in that vicinity, and arranged for vaccination at the public expense.

Dr. J. A. West, health officer of Hancock, reports that thus far no cases have appeared in his district.

On December 27th I discovered a case of varioloid in the southern suburbs of Hagerstown. Immediate vaccination of everyone about the premises, and of those who had been in contact, with complete isolation of the patient, disinfection of previously occupied apartments, and effective quarantine, have thus far prevented spread of the disease.

Very respectfully,

J. McP. Scott, M. D., *Health Officer.*

WICOMICO COUNTY.

Dr. Chas. R. Truitt, secretary, sends the following abstract from his diary:

December 11, 1897. Dr. Morris reports a case of scarlet fever at Fountain Humphreys', his three-year-old child having the disease.

December 15. Fountain Humphreys being in the store and suffering with sore throat, I discovered that he had scarlet fever, and since that time it has gone through the family.

December 17. I visited Allen, as there were reports of scarlet fever.

December 23. Dr. Truitt, of Parsonsburg, reports a case of diphtheria in family of Mr. E. H. Parsons, his daughter being afflicted with the disease. Ordered isolated from the rest of the family.

December 27. Case of scarlet fever reported in the family of Mr. Grier. Ordered to isolate the sick child.

December 27. Lacy Thoroughgood emptied lot of refuse out near his house, where it became very filthy. I notified him to abate the nuisance at once.

December 28. I notified Edward Martin to clean his privy.

December 30. Walter Humphrey's privy very bad; ordered it cleaned.

December 30. I notified S. Ulman & Bro. that their sink from water closets was overflowing.

December 30. Complaint made that privy used by employes of S. T. Richardson's stable was in a filthy condition. Notified him to abate the same in ten days.

January 25, 1898. Complaint was made that refuse from Mr. Disharoon's kitchen was being thrown on vacant lot next to where he lived. Notified to abate the same at once.

January 26. I notified J. P. Owens not to throw refuse of any sort on the vacant lot next to the Catholic Church.

January 26. I notified Mrs. Covington not to throw slops in the street back of her residence.

February 4. Complaint made that Mrs. Parsons was running dish and slop water in the gutter in front of where Mr. E. A. Toadvine lived. Notified her to empty the same into a barrel in her own lot, which was done.

February 4. Dr. Todd reports a case of diphtheria at Bob Jones'. I visited the place and ordered quarantine and isolation.

February 6. Complaint made that Mr. Levin Dorman's poultry yard was very offensive. Investigated and notified him to clean the same.

February 6. I notified Thomas Ennis to clean his privy.

March 7. Dr. Todd reports a case of diphtheria at Andrew Lee's, his wife having the disease. No cause to be found.

March 9. Dr. Todd reports a case of scarlet fever at Dick Dashiell's. I notified them to isolate the child.

March 12. Case reported by Dr. Dennis of diphtheria of Mr. Ulman's child. Notified them to isolate the case and stop the other children from school for two weeks.

April 10. Complaint made that John Disharoon's pound is in bad condition. Notified him to abate the nuisance.

April 15. Complaint made that the privy on the premises of Walter Humphreys was in very bad condition. Notified him to clean it.

May 2. Complaint made that the privy on premises of M. A. Parsons needed cleaning. Ordered it cleaned.

May 6. Complaint made of Morris Walton throwing refuse out at the rear of his residence. Notified him to remove the same at once and not to repeat the offense.

May 9. Capt. James Beauchamp reported a case of diphtheria at his house. On investigation found mild case.

May 20. Complaint made that Mr. J. Dorman had killed an old horse and partially covered it up, but hogs and dogs had uncovered it. Had him to cover it up with dirt, put boards above and cover the whole again with earth.

May 20. Complaint made that Mr. Neggie is keeping a nuisance near his house. Ordered him to abate the same.

May 23. Complaint made that Mr. Dorman's privy and poultry yard were in an offensive condition. I investigated and ordered him to abate the nuisance at once.

May 23. I received notice from Dr. Fulton to go to Parsonsburg and investigate a nuisance. The B. C. & A. R. R. was backing water in a ditch, as their trunk under the track would not carry off the water. I notified them to put in larger trunk.

May 27. Complaint made that Prof. Dashiell is throwing refuse in street that leads to steam laundry. Notified him to stop it.

June 14. Complaint made that the ditch that runs through Parsonsburg is filthy and in very bad condition. I visited the place and found that the trunk under the railroad was stopped up, and would not let water through. The water was passing through the broken trunk in a very small stream, but was not passing fast enough. Saw the manager and ordered it cleaned. I also saw Mr. Polk, of the railroad, and he said when they cleaned the ditch he would put in a new truuk under the road.

June 14. Alfred Philips notified to abate nuisance he had caused in the street by throwing out slops and fruit peelings.

June 14. Complaint made of the sewer in Humphrey's pond from the shirt factory and from Jackson Brothers' Mill. Notified to abate the same.

June 15. Complaint made that the hog pen in Mr. William Morris' lot was in a state of nuisance. Ordered him to abate the nuisance at once.

June 16. Notified Mr. M. Walton to clean his privy, and to stop throwing slops and refuse into the street.

June 17. Complaint made that Prof. Dashiell was throwing refuse in street. Notified him to abate at once under penalty.

June 17. Notified Mr. J. S. Adkins to stop throwing spoiled meat and refuse into Lake Humphreys.

June 20. Complaint made that Mrs. Hayman, of the Merchants' Hotel, was throwing slops in the gutter. Investigated and notified her to abate the same.

June 20. Complaint made that Mrs. Lacy Thoroughgood was throwing dishwater and refuse in street. Notified to abate at once.

June 20. Complaint made by Mr. J. T. Parsons that the lumber yard owned by Mr. W. B. Tilghman was being used by the public as a privy. Notified Mr. Tilghman to do all in his power to prevent it.

June 20. Complaint that Mr. Farlow's privy was in bad condition. Notified him to abate the nuisance at once.

June 21. Dr. Slemons reports a case of scarlet fever at Mrs. Warren Hastings. I inspected the place and notified Mrs. Hastings to keep the sick child isolated.

June 30. Complaint made that Mrs. Covington was throwing peelings and slops in the gutter. Notified to abate the same at once.

July 5. Notified by Dr. Hasbrouck, that Mr. William Morris' wife had typhoid fever. I investigated and could find no cause.

July 6. Complaint about odor from privy at Mrs. Ennis' boarding house. Ordered it cleaned at once.

July 9. Complaint of nuisance at the place where Buck White sells fish. On investigating found some spoiled fish. Ordered the place cleaned.

July 12. Dr. Dick reports a case of diphtheria on Camden street. Ordered the place to be cleaned and patient isolated. Used antitoxine with good results.

July 14. Dr. Hasbrouck reports a case of scarlet fever at Denard Bailey's. Ordered isolation. The child died.

July 14. Complaint made that the privy on the premises where John Gordy keeps store is foul. I notified Mr. Clarence Brewington, and he had it attended to at once.

July 18. Complaint made that Sem Chung was throwing refuse out in the alley, back of his laundry. I visited the place and ordered him not to repeat the offense.

July 18. Complaint made and also a request that I go to Parsonsburg at once and see the ditch after a big rain. Found the water several feet deep in ditch; also had gone up in the neighboring lots and in the hog pens and under the privies.

The water was ankle deep in the lots. The people could not go from their houses to their hog pens without wading. Finding so much stubborness on the part of the responsible parties I took the case before the commissioners. There is much sickness—three deaths a week—and the doctors say that the foul ditch is responsible for part of the sickness.

July 20. Complaint made by neighbors that Tom Adkins is throwing refuse in the street. On investigating found rotten fruit thrown out. Ordered Mr Adkins to stop making a nuisance in the street.

July 25. Dr. Dick reports a case of diphtheria in a colored family on East Camden street. On investigating found several families in the house. The patient was isolated and no more cases developed. After recovery place was disinfected.

July 26. Complaint made of Wheatly Brittingham's hog pen. On investigation found great deal of water standing in the pen. Ordered the nuisance abated.

July 26. Dr. Todd reports a case of measles in the country. He ordered the patient to be isolated, and precautions taken to prevent spreading.

July 26. Dr. Dick reports case of typhoid fever in family of colored preacher at Fruitland, Maryland.

July 28. Dr. Long sent for me to go to Allen to see a case of diphtheria there. Isolated and at last report doing well.

July 28. The railroad company has put in a large tile drain under the railroad at Parsonsburg.

July 31. Complaint made that the shirt factory is emptying sewerage in Humphrey's pond. Notified to abate the nuisance.

August 1. Complaint made that Mr. B. Gillis has a barrel of rotten vegetables at his store. Ordered removal at once.

August 10. Dr. Long reports typhoid fever in family of John Harmon. There were five sick. At time of investigation one had died.

August 15. Dr. Todd reports case of diphtheria.

August 18. Complaint made that S. Ulman & Brother were maintaining a nuisance. On investigating found a large box filled with decaying vegetable refuse. Notified him to abate at once.

August 19. Complaint made that the ditch that runs through Delmar town is filthy. Ordered cleaned.

August 20. Complaint made that Mr. D. S. Wroten throws refuse in the gutter back of his store, also running bloody water in the gutter. Investigated and notified Mr. Wroten to abate the nuisance.

August 22. Complaint made that privy on the wharf near West Main street was foul. After investigation ordered it cleaned.

August 22. Complaint made that the alley by W. H. Rounds' store needed attention. On investigating found a quantity of manure where people had hitched their horses. Notified Mr. Rounds to have the nuisance abated.

August 23. Complaint made that Sandy Slemons is making a nuisance back of his fish stand in an alley. On investigating found the place filled with fish refuse. Ordered cleaned at once.

August 23. Complaint made that Mr. J. Sidney Adkins was maintaining a nuisance. On investigating found a very filthy slop barrel. Ordered it removed at once.

August 24. Complaint made by Mrs. Lizzie Benson that hog pen next door was very foul. On investigating ordered sawdust put in the pen.

August 24. Dr. Todd reports a case of diphtheria at Sidney Johnson's. Ordered isolation.

August 25. Complaint made by several neighbors that John Disharoon's premises needed attention. On investigating found privy and stables in bad condition. Ordered abated within six days.

August 25. Complaint made that the hog pen belonging to Mr. Ben Parker was in bad condition. Notified Mr. Parker to clean at once.

August 27. Complaint made by neighbors that Wes Parsons was maintaining a nuisance. On investigating found his hog pen in very bad condition. Notified him to abate the nuisance at once.

October 4. Dr. Ellegood reports a case of diphtheria just outside of Delmar, in the family of Lecates. He had the case isolated at once. Used antitoxine.

October 10. Dr. Hasbrouck reports a case of scarlet fever in the family of Mr. Jay Williams. Isolated.

October 14. Dr. Hasbrouck reports a case of diphtheria in a colored family. I visited the place and ordered isolation.

October 19. Dr. Hasbrouck reports a case of scarlet fever at Mr. Isaac Adams'. He had him isolated.

October 23. Dr. Hasbrouck reports case of scarlet fever at S. F. Disharoon's. Isolated.

October 31. Complaint made that S. F. Disharoon had let two of his children go to school when they had a case of scarlet fever in the house. I notified the family that they had violated the law, and that unless they kept the children home I would have them arrested and fined. Also instructed the teacher not to receive the children in school again without a certificate from the attending physician.

October 31. Complaint made that Mr. Buck White has a nuisance at his saloon under the old hotel. On investigating found a pile of ill-smelling oyster shells. Ordered the place cleaned at once.

The following are the cases of contagious and infectious diseases in the county since last report:

Typhoid fever, 18; typho-malarial fever, 33; scarlet fever, 12; measles, 9; diphtheria, 9.

WORCESTER COUNTY.

January 11, 1899.

So few physicians have sent in their certificates of deaths and births that they are wholly unreliable as a basis for a report of the vital statistics of the county. The number of returned being only thirty-three (33) certificates of death and six (6) of birth, all of which were duly registered.

We shall therefore have to rely almost exclusively upon observation and close investigation as to the health of the county. Judging from this standpoint, we can safely assert that the last year has been exceptionally healthy. We have had no epidemics except one of "la grippe," which still prevails, but in a mild form. We have had several sporadic cases of typhoid fever, whilst malarial fever seems to decrease year by year, insomuch that the "opprobium," that the Eastern Shore of Maryland and chills and fevers are "synonymous terms," no longer applies.

There have been some cases of measles, scarlatina and diphtheria, fatal only in a very few instances.

Respectfully,

Chas. P. Jones, M. D.,

Health Officer.

TOWN BOARDS OF HEALTH.

ABERDEEN—HARFORD COUNTY.

DR. J. H. KENNEDY, Health Officer. No report.

ANNAPOLIS—ANNE ARUNDEL COUNTY.

ANNAPOLIS, MD., December 31, 1898.

DR. JNO. S. FULTON :

DEAR DOCTOR : I have the honor to send herewith a brief report of the work of our local board for the past year. My official knowledge of the health of the city dates only from August, when I was appointed health officer. A reference to the record of vital statistics up to that time would seem to indicate an excellent conditon, and my personal observation since shows a continuance of the blessing.

While there has been some laxity in reporting births and deaths, the majority of the physicians have complied with the law. The records show twenty-five births and thirty deaths up to this date. Although a number of cases of contagious diseases, notably scarlet fever, have appeared in the country districts near Annapolis, only one case of that and three of diphtheria have been reported to me in our city, all being of a mild character, and proper precautions as to isolation and disinfection adopted.

Numerous complaints of nuisances were presented to me during the past summer, which were investigated and abated.

Owing to efficient sanitary regulations and an abundance of pure water, Annapolis has enjoyed a measure of good health second to no other town of its size in the union.

Respectfully,

WM. S. WELCH, M. D.

BRUNSWICK—FREDERICK COUNTY.

BRUNSWICK, MD., September 1, 1898.

To the Honorable Mayor and Council :

We have the honor to submit for your consideration a report of the operations of the board of health from the time of its organization, December 10, 1888, until the end of the term, August 31, 1898.

The board of health organized Friday evening, December 10, 1897, electing Dr. A. G. Horine, chairman and E. L. Harrison, secretary.

December 11, 1897, communication was opened with the health officer for Frederick county, Dr. Wm. H. Batzel, of whom we asked information as to forms, methods, etc., for conducting the business of the board, and by arrangement Dr. Baltzel met with us in the Mayor's office on the morning of January 2, 1898. A general discussion of health matters was entered into, and resulted in the board acquiring much beneficial knowledge.

January 10, 1898, notice was given the State Board of Health of our organization, and information asked for as to forms, etc. A reply was received January 15 from the Secretary, Dr. Jno. S. Fulton, expressing gratification that our town had "entered the sanitary procession which is moving rapidly in Maryland." Accompanying this communication were some samples of the forms necessary in our work. The Legislature has since provided for the collection of vital statistics by the State Board of Health, and we have been supplied with the necessary forms and books for reporting and registering births and deaths, also copies of special laws enacted by the late Legislature as to the notification of infectious diseases, registration of births and deaths, etc., which have been distributed to the physicians of our town.

We are in receipt of a letter from Dr. Fulton, in which, referring to our sanitary ordinance, he says: "Your sanitary code is a very good document, its sections relating to the reports of death and infectious diseases being especially good. The requirement of a return within a few hours after each death is a point wherein your ordinance is distinctly better than the State law. The registration would go on much more smoothly if that were the law throughout the State."

And again, under date of August 16th, he says:

"We are exceedingly grateful to you and the other health officers who are doing the very best with the registration. It is a most important work, but its importance will be rather slowly impressed upon the public, including the doctors. We shall be able to win out by pulling together, and will in the course of a few years put Maryland where she belongs among the States."

The sanitary ordinance confines the monthly inspections by the board to "the condition of the streets, lanes, alleys, roads, sewers and drains of the town," yet while making such inspections we did not hesitate to issue nuisance notices against offensive privies, hog pens, stables and accumulations of manure upon private property, which were apparent, from the street. If the nuisance was a particularly dangerous one, it was inspected again within a few days.

The moral effect of these visitations is good. In many instances the visit of the board was in itself sufficient to cause an abatement of a nuisance.

There has been, with few exceptions, prompt and cheerful compliance with the requirements of the sanitary ordinance, and we wish to make acknowledgment of our appreciation of the hearty co-operation upon the part of many of our citizens. There are others who have not taken kindly to the health regulations, and considerable ill-feeling has been manifested towards individual members of the board, but we have not permitted this consideration to interfere with the execution of our duty, and it will probably be necessary to enforce the law in a case or two, to convince a few unreasonable people that there is sufficient authority behind the health ordinance to enforce its regulations.

An inspection was begun May 25th and finished June 7th. Thirty-six nuisances were noted and notices issued—twenty-one of them on account of offensive hog pens, eleven on account of excessive and offensive accumulation of manure, and four on account of offensive privies. The quantity of manure hauled away in response to these notices was astonishing, many persons having permitted its accumulation for years.

An inspection was made in July, but the weather being very dry few nuisances were noted.

An inspection was begun August 11th and finished August 19th. Many hog pens, privies and stable yards, which were inoffensive during the dry weather, were now developed by the rain into nuisances. Seventy of these places were noted and notices served, the greater number being against hog pens.

The hog-pen question being one of the most serious which confronts the people of our town, and the most unsatisfactory with which the board of health has to deal, an effort was made while upon our last inspection to locate and account for, as far as possible, each pen in the place.—Twenty-one pens were located and inspected in the first ward, fourteen in the second ward and forty-one in the third ward—seventy-six in all. Only a few of them were inoffensive. Notices were served upon the owners of the others, some of whom had been previously notified.

According to our sanitary ordinance, a hog pen must become offensive to the neighborhood, and formal complaint made to the board of health, before any means for its suppression become operative. It would appear that they are considered nuisances so far only as odor is concerned, and that the menace to health is overlooked.

In this matter we have not had the co-operation of our people. It is almost impossible to get formal complaint against any particular pen; yet, as we have said before, when making inspections we served notices upon all owners of offensive pens coming to our knowledge.

In the case of the State against Shafer and others, of Hagerstown, a case in which the hog-pen nuisance became so great, the local authorities so helpless in the face of determined opposition of the hog-pen owners, that litigation was resorted to, Judge Stake said, in part:

"The presence from day to day of the excrements of such pens, or of the ordinary swill used in feeding swine, is productive of the propagation of disease germs in such numbers and of such virulence as to seriously affect the health of a city or town. Unless, therefore, the swill used in feeding is entirely consumed, and the excrement removed to some safe distance from the town daily, or more frequently, it is difficult to perceive how swine can be reared or fattened within the limits of or adjacent to the town without such pens becoming such nuisances as it is the declared policy of the State to abate."

In a paper read at the Public Health Conference in Baltimore, Dr. S. S. Maynard, of Frederick, says of hog pens:

"They are a terrible nuisance. They are incubators of disease germs, which swiftly propagate, sally forth to permeate the water, the air and the food with elements dangerous to the health of man. This danger is far reaching. It exists not only in the excrements which gather there and saturate the soil, polluting springs, wells and the local avenues of drainage, but there is an added danger even more seriously to be reckoned with from the decaying vegetable matter that stands in the swill barrels and garbage buckets, throwing off poisonous effluvia to an extent which a thoughtless populace seldom realize."

On March 30th information was received by the board of health that there were several cases of scarlet fever in the building, in a part of which Miss Luckett conducted a school for small children. Miss Luckett was immediately requested to discontinue her school in said building until the cases were recovered and the building disinfected. The request was complied with.

A case of typhoid fever was reported on August 13th, in the third ward. The place was visited by the board seeking for local cause. Found the disease had been contracted in or near Berkeley Springs. The nurse informed us that the stools from patients were being emptied out upon the ground without disinfection. This practice which greatly endangered the entire community was ordered discontinued and necessary instructions given as to disinfection of stools, clothing, etc.

Three essentials to health are pure air, pure soil and pure water. If the soil is impure, the water can hardly fail to be impure also. When we consider that the filth from seventy-five or eighty hog pens, numerous stables, and the waste from probably 3,000 persons is being absorbed into the soil of the town, we cannot but admit that the condition is serious. If the danger point is not already here, it cannot be far distant. Soil contamination was one of the first subjects considered by the board.

February 14, we addressed a communication to the Mayor and Council, recommending that water-tight boxes be substituted for the privy pit, and that a scavenger service be inaugurated. We understand this recommendation was given some consideration by the Council, but no decisive action seems to have been taken. We again most urgently request that the matter be carried forward to a speedy conclusion.

If the hog pen is to continue, we recommend that it be under conditions that do not make it necessary for the board of health to be in receipt of a formal complaint before they can take steps to suppress nuisance arising from them.

An alley which lies parallel with the east side of Mr. Kephart's lot, in the first ward, should be provided with some method of drainage. It is higher at either end than in the middle. The property on the east side being higher drains into the alley, and thence through a number of lots on the west side. In its course it floods three or four cellars, which are thereby rendered very unhealthy. There were three cases of typhoid fever in one of the houses last fall.

We have interviewed a number of physicians as to the health conditions of the town, and their statements agree that we have had comparatively much less sickness this summer than during previous summers.

We must not be discouraged because the board of health has not accomplished everything in the first nine months of its existence. A system had to be formulated and methods tested, and while encouraging a respect for sanitary regulations among our people, we too have been profiting by our experience.

Dr. A. G. Horine, *Chairman.*

Eugene L. Harrison, *Secretary.*

Brunswick, Md. January 4, 1899.

Dr. Jno. S. Fulton, *Sect'y State Board of Health.*

Sir: We take pleasure in sending you, per your request, a *resume* of the work done by the Brunswick Board of Health during the year 1898.

The ordinance providing for a sanitary board and establishing sanitary regulations for the town of Brunswick was adopted January 10th, 1898.

The original members of the board were Dr. A. G. Horine and Messrs. Z. T. Brantner and E. L. Harrison, but upon the expiration of the term, August 31st, Messrs. Horine and Brantner were succeeded by Dr. H. S. Hedges and Mr. J. T. Martin.

Our system of reporting deaths and infectious diseases was not gotten into effective working order until late in February, consequently our records for January and February are incomplete.

The board is required to make sanitary inspections of the town monthly, between May and October. As a result of these inspections, the attention of many residents have been called to the unsanitary condition of their premises. Requirements of the board have in many instances been complied with very ungraciously and in some cases the improvements have not been permanent. In two or three cases at least it has been necessary for us to enter certain premises and take charge of the cleaning thereof. In general the sanitary conditions of the town has very considerably improved.

Since our organization we have earnestly striven to secure more effective legislation. We have quite a comprehensive measure now under consideration and which has fair prospects of being adopted at an early date, whereby the ordinary privy pit will be superseded by water-tight boxes or barrels and the establishment of a scavenger service. Our efforts toward the banishment of the hog, we regret to say, have not as yet met with any substantial degree of success. As in many other towns the numerous filthy hog pens, which defy all efforts at cleanliness, are a menace to health and a constant source of annoyauce. Consideration for political futures have apparently the effect of making those in authority more timid in taking hold of this than any other sanitary requirement. However we do not despair of ultimate success. Except in two or three cases reports of infectious diseases have been received promptly. In each case an investigation was made. We usually found competent physicians in charge, who had done everything possible toward isolation and disinfection. Any conditions particularly favorable to the propagation of disease was promptly remedied. Isolation and disinfection with the limited means at our disposal continue with us a problem rather difficult of solution. The number of preventable diseases has not been large, the caee were generally of a mild character, and but a small proportion fatal.

In March, on account of there being a couple of cases of scarlet fever in part of a building in which was conducted a private school for small children, it was necessary to close the school for a time.

We have given particular attention to typhoid fever. Four cases have been reported. Three of these were contracted abroad.

By making an average for January and February, we arrive at a death rate for the year for our population of about 3,000 of 14.4 per 1,000.

Record of Infectious Diseases.

	January.	February.	March.	April.	May.	June.	July.	August.	September.	October.	November.	December.	Total.	Recovered.	Fatal.
Diphtheria	2	..	1	1	..	..	..	..	1	1	1	4	11	8	3
Scarlet Fever	..	..	4	1	..	..	..	..	..	..	..	..	5	5	..
Typhoid Fever	..	..	..	..	..	..	1	..	1	1	1	..	4	4	..
Measles	..	..	..	..	..	3	1	..	..	..	..	..	4	4	..
Mumps	..	..	..	..	..	..	..	..	..	1	3	2	6	6	..
Chicken Pox	..	..	..	..	..	..	..	..	..	..	..	1	1	1	..
Total	2	..	5	2	..	3	2	..	2	3	5	7	31	28	3

Records of Deaths for 1898 *by months.*

	January.	February.	March.	April.	May.	June.	July.	August.	September.	October.	November.	December.	Total.
Brain Fever	..	..	..	1	..	..	..	..	..	..	..	..	1
Cardiac Failure	..	..	..	..	1	..	..	..	..	..	..	..	1
Croup, Membranous	..	..	1	..	..	..	..	..	..	..	..	..	1
Consumption	..	..	2	2	..	1	1	..	..	1	..	..	7
Diphtheria	..	..	1	1	..	..	..	..	..	..	..	1	3
Diarrhoea	..	..	..	..	..	..	..	1	..	..	..	..	1
Eclampsia	..	..	..	..	..	..	1	..	..	..	..	..	1
Exposure	..	..	..	..	..	..	..	..	..	..	..	1	1
Peritonitis	..	..	..	..	1	..	..	..	..	..	..	..	1
General Paralysis	..	..	..	..	..	1	..	..	..	..	..	..	1
Gastritis	..	..	..	..	..	..	..	..	1	..	..	..	1
Heart Trouble	..	..	..	..	..	..	..	..	..	..	..	1	1
Internal Convulsions	..	..	..	..	..	..	..	..	1	..	..	..	1
Meningitis	..	..	..	1	..	..	..	..	1	..	..	..	2
Marasmus	..	..	2	1	..	1	1	..	..	..	..	..	5
Nephritis, Chronic	..	1	..	..	..	..	..	..	..	..	..	..	1
Premature Birth	..	..	..	..	2	..	1	..	..	..	..	..	3
Puerperal Convulsions	..	..	..	..	..	..	..	..	..	1	..	1	2
Old Age	..	..	..	..	..	..	..	..	..	..	..	1	1
Railroad Accident	..	..	..	..	..	..	..	..	..	..	1	..	1
Uraemia	..	..	..	1	..	..	..	..	..	..	..	..	1
Total	..	1	6	7	4	3	4	1	3	2	1	5	37

H. S. Hedges, M. D.,
J. L. Martin,
Eugene L. Harrison,
Board of Health.

CAMBRIDGE—DORCHESTER COUNTY.

DR. JOHN MACE, Health Officer. No report.

CATONSVILLE—BALTIMORE COUNTY.

CATONSVILLE, December 26, 1898.

DR. JOHN S. FULTON, *Secretary State Board of Health:*

MY DEAR SIR: I herewith transmit my health report for Catonsville and the first (1st) district of Baltimore county for year ending December 1, 1898.

Previous to month of June of present year I am unable to give you any definite data, but from personal observation and rather indefinite reports sent in will give you what data I possess. From June 1st to December 1st the report is more accurate, due to enforcement of vital statistics law, and I here wish to thank and commend all the physicians in my district for the faithful and prompt manner in which they made their reports to me since June 1st.

From December 1897, to June 1, 1898, there were reported the following cases of infectious and contagious diseases, viz:

At Oella...............	48	cases of	measles.
	2	"	scarlet fever.
	2	"	diphtheria.
At Catonsville..........	4	"	measles.
	1	case	diphtheria.
At Mt. Gilboa..	5	cases	measles.

From personal observation during this period I noted that my district was unusually healthy.

From June 1st to December 15, 1898, the following diseases and number of cases and locality my district were reported:

At Catonsville—	Measles..................	11 cases.
	Scarlet fever..............	6 "
	Typhoid fever............	30 "
	Diphtheria..	1 case.
	Whooping Cough.........	2 cases.
	Varicella..................	13 "
	Mumps	Number not stated.
At Dickeyville—	Measles....	1 case.
	Scarlet fever....	4 cases.
	Varicella.................	1 case.
	Mumps.......	Quite a number.
At Hebbville—	Measles.......	4 cases.
At Oella—	Diphtheria...............	3 cases.
At Violetville—	Diphtheria	9 cases.

At Arbutus, School No. 1, 13th district, thirty-six cases of whooping cough.

Of the large number of cases of typhoid fever given for Catonsville, twenty-four cases occurred during months of July, August and September, and from investigation by State Board of Health and myself, same was attributed to pollution of wells by living well cesspools, and until this pernicious practice is abandoned, we may look for a large number of cases each year. During summer of 1898 nineteen cases were reported, and this summer and autumn the number increased to thirty, showing an increase of eleven, which should be sufficient warning to those in danger.

Since the introduction of water works the law passed in 1888 became useless, as said law only applied to properties supplied with water from wells and springs, and all those who have obtained their supply of water from the local company have taken advantage of this and converted their wells into cesspools as a cheap plan of getting rid of such offal.

With this exception the health of this community has been exceptionally good.

The attendance at public schools has been very good, which is one of the best indications of the health of a community.

In the course of my duties, visiting the schools and vaccinating the children, I noticed the bad sanitary condition of our public high school. I called the attention of the patrons and residents in general to its condition with such success that there is now in course of construction and will be ready for occupancy by 1st of February, 1899, a $10,000 school, with all approved means of ventilation and heating, and when completed Catonsville can boast of one of the best and healthiest school buildings in any town in Maryland.

The health of Oella during this same period was also very good, and the only reports received from there were three cases of diphtheria.

Having had an epidemic of measles there during the first part of year, I visited the school located there and found it very defective in ventilation, and called the attention of school board to same, who immediately gave me the authority to have same remedied, which I did to entire satisfaction of all connected with same.

Would report that the school at Gray's was abandoned because unhealthy and a proper building was rented for use of school.

Also would report abandonment of an old school midway between Catonsville and Oella, on account of bad sanitary condition, and the replacement of same by an $1,800 brick building, supplied with all modern improvements for ventilation and heating.

The reports from Dickeyville show that village to be in quite a healthy condition, and same can be said of Hebbville.

On October 30th I invested and ordered closed School No. 1, at Arbutus, 13th district of Baltimore county, on account of an epidemic of whooping cough.

Now as to births and deaths:

The number of births and deaths during first six months of year, I cannot give, with exception of those in my own practice, which would be of no use from a statistical standpoint, but for last six months, from June 1st to December 1st, I think are very near perfect, as I have taken especial pains to have them so, and when I discovered some were not reported, due more to ignorance of law than unwillingness to obey it, I immediately notified those failing to report, and they promptly responded.

Appended you will find a tabulated report, but would recommend that, before we have to make our next report, the State Board of Health should issue to each sub-registrar a printed form for making out reports. This would simplify as well as make them more readily understood.

Yours very truly,

CHARLES L. MATTFELDT, M. D.,
Health Officer Catonsville and Vicinity.

Reports of Births and Deaths in Catonsville and First District of Baltimore County.

BIRTHS.

Total number reported from June 1 to December 1, 1898, 90; white, (males 33, females 34) 67; colored, (males 13, females 10) 23; of which there were still born, 8, (white 4, colored 4.)

Of these—

60 were born in Catonsville.
2 were born in Franklintown.
4 were born at Grays.
11 were born at Dickeyville.
2 were born at Thistle.
1 was born at Johnny-cake.
6 were born at Oella.
3 were born at Mt. Gilboa.
1 was born near Violetville, 13th district..

The number of deaths occurring during same time were as follows:

Total number reported was 70. White, (males 27, females 33,) 60. Colored, (males 6, females 4,) 10.

The causes of death were given as follows:

Cause.	No. of Cases.	Cause.	No. of Cases
Nephritis	4	Gastric Ulcer	1
Appendicitis	1	Senile Decay	1
Diarrhea	2	Scrofula	1
Pneumonia	4	Puerperal Septicemia	1
Cerebro Spinal Meningitis	5	Carcinomia	1
Pulmonary Tnberculosis	5	Typhoid Fever	2
Cholera Infantum	4	Diphtheria	1
Fibroid Tumor	1	Valvular Disease of Heart	4
Premature Birth	3	Cerebral Hemorrhage	5
Scarlet Fever	1	Senile Dementia	1
Brain Tumor	1	Arterio Sclerosis	1
Hydrocephalus	1	Emphysemia	1
Marasmus	2	Paralysis, (Progressive)	1
Locomotor Ataxia	1	Acute Laryngitis	1
Mania and Dementia	6	Paranoia (suicide)	1
Epilepsy	2		
Dysentery	4	Total	70

AGE OF DECEDENTS.

Under five years	15	Between 55–60 years	4
Between 5–10 “	3	“ 60–65 “	5
“ 10–15 “	2	“ 65–70 “	1
“ 15–20 “	3	“ 70–75 “	1
“ 20–25 “	1	“ 75–80 “	4
“ 25–30 “	4	“ 80–85 “	2
“ 30–35 “	4	“ 85–90 “	2
“ 35–40 “	2	“ 90–95 “	1
“ 40–45 “	5		
“ 45–50 “	5	Total	70
“ 50–55 “	6		

Nativity.

60 were natives of the United States.
4 were natives of Germany.
3 were natives of England.
2 were natives of Ireland.
1 was a native of Norway.

Total, 70

Occupation.

Laborers, 7; contractors, 2; housewives, 12; merchants, 2; and one each of following: book-keeper, ticket agent, school teacher, mill hand, druggist, plasterer, carpenter, captain of boat, dressmaker, locksmith, police officer, farmer, dancing master, shoemaker, mechanic, and thirty-two whose occupation was not given. Total, 70.

Place of Death.

19 of these deaths occurred at Maryland Hospital for Insane.
26 were residents of Catonsville and vicinity.
10 were residents of Dickeyville and vicinity.
6 were residents of Oella and vicinity.
3 were residents of Grays and vicinity.
2 were residents of Franklintown and vicinity.
2 were residents of Mt. Gilboa and vicinity.
1 was a resident of Thistle and vicinity.
1 was a resident of Ellicott City, (Baltimore county.)

CUMBERLAND—ALLEGANY COUNTY.

Dr. Geo. L. Carder—Health Officer. No report.

FREDERICK CITY—FREDERICK COUNTY.

Dr. C. F. Goodell—*Health Officer.*

Frederick, Md., January 1, 1899.

I received my appointment as City Health Office on May 1, 1898. Since July 1st the statistics of births and deaths have been accurately kept. The physicians of the city have given me their hearty co-operation in carrying out the provisions of the new law. I have kept the physicians supplied with stamped envelopes, which I find facilitates the return of the cards to my office. We have had an epidemic of scarlet fever in our city for the past eight months. Over two hundred cases have been reported to the health office. But one death from the fever has been reported, which is a remarkable showing.

There has been one prominent nuisance abated. It was found that there was a drainage of water from a privy well into the gutters of one of our chief streets.

While there are a good many hogs kept within the corporate limits, in the great majority of cases the pens are located in the outskirts of the city, and in sparsely settled districts. Very few complaints were made, and these cases were promptly attended to.

In my judgment, the provision of the law regarding the vaccination of children by physicians appointed by the County Commissioners, should be so amended as to compel the vaccine physicians to procure their points either from the State vaccine agent or direct from the State Board of Health.

Never in my sixteen years' experience as a physician have I seen as many cases of faulty vaccination or vaccination with impure virus as has come under my observation during the past four months in this city. It is no wonder that many parents object to having their children vaccinated when thay see how their children have to suffer when impure virus is used.

Records of Deaths from August 1, 1898, *to July* 31, 1898.

Disease.	1897.					1898.							Totals.
	Aug.	Sept.	Oct.	Nov.	Dec.	Jan'y.	Feb.	March.	April.	May.	June.	July.	
Anæmia (Pernicious)							1						1
Atelectasis (Pulmonary)												1	1
Apoplexy		1					1		1		1	1	5
Asthenia												1	1
Asthma				2									2
Alcoholism								1					1
Bright's Disease						1					2		3
Bronchitis	1		1		1		1		2				6
Bronchitis (Capillary)			1			1	1						3
Burns	1												1
Cancer	1						1						2
Cancer of Breast					1								1
Cholera Infantum	3											3	5
Cerebral Congestion							1			1			2
Convulsions			1			1						1	3
Croup, Membranous									1				1
Colica Pictonum						1							1
Diabetes										1			1
Dentition		2											2
Diarrhœa											1		1
Dysentery		1											1
Exposure					1								1
Embolism (Cerebral)				1		1							2
Enteritis												1	1
Entero-Colitis	1											2	3
Fever, Typhoid				1				1				1	3
Fever, Remittent				1									1
Gastric Catarrh												1	1
Gangrene									1				1
Heat Stroke												1	1
Heart Disease	1		1		2	1		1	1		1		8
Heart, Dilation of											1		1
Heart, Rheumatism of						1							1
Hemiplegia	1	1											2
Locomotor Ataxia									1				1
Marasmus	2									1		1	2
Meningitis, Cerebro Spinal										1	1		2
Malnutrition						1							1
Old Age		1		1		1	1	1	2				7
Paralysis	1	1				1	1	1	1	1			7
Paralysis of Heart				1						1			2
Premature Birth	1	1					1	1					4
Peritonitis											1		1
Pneumonia							1			1			2
Pulmonary Collapse					1								1
Pulmonary Tuberculosis	1		1	2	1	2			2	1	2		12
Oedema of Lungs			1										1
Septic Poisoning			1									2	3
Softening of Brain												1	1
Tabes Mesenterica	1			1									2
Trismus Nascentium						1							1

Record of Deaths—Continued.

DISEASE.	1897.					1898.							Totals.
	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	March.	April.	May.	June.	July.	
Tertiary Syphilis	..	..	..	..	1	..	..	..	..	..	..	..	1
Scarlatina	..	..	..	1	..	..	..	..	..	..	..	..	1
Scurvy	..	..	..	1	..	..	..	..	..	..	..	..	1
Suicide	..	..	..	..	..	..	..	..	..	1	..	..	1
Still Births	1	1	2	1	..	..	1	..	1	..	..	..	7
Unknown	..	..	..	..	..	..	..	..	..	1	..	..	1
Died under 5 years	10	6	3	6	2	5	3	2	3	5	..	5	50
Died between 5 and 20 years	1	..	1	1	..	1	..	1	1	..	1	1	8
Died between 20 and 40 years	1	..	1	4	4	3	..	1	3	2	5	2	26
Died between 40 and 60 years	3	3	2	1	3	3	7	1	5	3	2	2	35
Died over 60 years	..	1	2	1	..	1	2	2	2	..	2	2	16
Deaths, white	12	7	5	8	5	8	12	5	11	5	5	15	98
Deaths, colored	3	3	4	5	4	5	..	2	3	7	4	3	43

FROSTBURG—ALLEGANY COUNTY.

FROSTBURG, MD., January 1, 1899.

DR. J. S. FULTON.

DEAR DOCTOR: The following were reported to me during the year:

Scarlet fever, 50 cases.

Typhoid fever, 20 cases.

Diphtheria, 10 cases.

There were 52 deaths during year—apoplexy, 4; bronchopneumonia, 1; diabetic coma, 3; dysentery, 3; acute nephritis, 1; carcinoma of stomach, 1; endocarditis, 1; bronchitis, 1; phthisis, 5; peritonitis, 2; pneumonia, 2; killed in mines, 2; tabes dorsalis, 1; gangrene, 1; heart disease, 5; anuerism aorta, 1; tumor of the omentum, 1; diarrhea, 2; cholera infantum, 2; inanition, 4; meningitis, 1; uraemic convulsions, 2; convulsions, 4; osteo sarcoma, 1; la grippe, 1.

Yours respectfully,

O. W. McLANE.

HAVRE DE GRACE—HARFORD COUNTY.

January 3, 1899.

DR. JOHN S. FULTON, *Secretary State Board of Health.*

DEAR DOCTOR: The vital statistics obtained by our local board of health are not altogether reliable. I have endeavored to get reports of all cases which came to my knowledge, but have reason to believe that not all cases were reported.

This is particularly true in regard to births. Since June there have been but nine (9) births reported; of these one was stillborn and another was from a small town in the county. With a population of about 3,500 in Havre de Grace, this is a very poor showing.

Cases reported were: Deaths, white, 39; black, 3; brought here for burial, 16; removed for burial, 4; deaths from typhoid, 3; deaths from diphtheria, 1.

Number of cases reported: Mumps, 1; measles, 2; scarlatina, 2; diphtheria, 6; typhoid, 14.

There were rumors of more cases of typhoid fever not reported by the attending physicians.

There is no doubt that typhoid fever is quite prevalent here every autumn. I have not been able to assign any cause for it, but incline to the belief that it depends mainly on the ground water, as was the case in Munich.

Much complaint has been caused by the presence of pig pens within the town limits. I have advised the passage of an ordinance forbidding the keeping of pigs within the limits, but as yet nothing has been done in the matter.

Aside from typhoid fever there has been no unusual amount of sickness until recently. At present almost every one is suffering more or less from manifestations attributable to grippe.

Some provisions should be made for the disposal of offal from the fisheries. At present most of it is dumped into the river. As the water supply of the town is drawn from the river, it frequently happens in spring, during the fishing season, that the water is hardly fit to drink.

Very respectfully yours,

H. S. WEUSTHOFF, M. D.
Health Officer.

HIGHLANDTOWN—BALTIMORE COUNTY.

DR. A. S. WARNER—Health Officer. No report.

KENSINGTON—MONTGOMERY COUNTY.

DR. W. L. LEWIS—Health Officer. No report.

LAUREL—PRINCE GEORGE'S COUNTY.

DECEMBER 31, 1898.

The general health of our surrounding county has been very good. Very little malarial fever, some typhoid, but less than in former years.

Few sporadic cases of diphtheria, which were readily controlled, and no fatalities. Bacteriological examinations, as furnished by Dr. Stokes, have been of great help in early diagnosis, and no doubt prevents its spreading.

A few of the local physicians have availed themselves of the opportunity to have the tests made for different types of fevers, and pronounce it a great benefit to them in their work, and no doubt a protector to life.

The vital statistics have been poorly complied, owing to negligence of undertakers and physicians. Until the present law is enforced, Maryland will have to be classed as going backward, not forward. It is very easy to fill out the simple cards furnished by State Board of Health, and any physician who is familiar with Baltimore City's law will be only too glad to supply the required certificate.

In the extreme heat of summer we expected a large number of fatalities among infants, but strange to say, the mortality was less than for the past five years, which I believe is as far back as any record has been kept here.

Prospective water works for our town will lessen the causes for fevers, and we will then be up in general sanitary surroundings.

J. R. HUNTT, M. D., *Health Officer.*

LONACONING—ALLEGANY COUNTY.

LONACONING, MD., January 7, 1899.

DR. JOHN S. FULTON, *Secretary State Board of Health :*

I submit herewith my annual report as health officer for the town of Lonaconing. There has been but a moderate amount of sickness during the year. There have been six cases of diphtheria, six of scarlet fever and seven of typhoid fever, two of the latter imported. In April and May we had an epidemic of mumps. In September and October whooping cough prevailed. Thirty-nine deaths have occurred during the year. Placing our population at 5,400, a low estimate, this would give a death rate of only seven per thousand.

The various nuisances coming to the knowledge of the board have been inspected and abated, mention of all which has been made in the regular monthly report to the town Council.

The law in regard to vaccination has been complied with so far as regards children of the school age. Care has been taken to have the new law requiring registration of births and deaths carried out faithfully.

A thorough inspection of the water shed of our public water supply was made during the summer. Nearly the entire area is forest covered, only two families residing thereon. These have been visited, and they have, at the request of the health board, arranged to dispose of all nuisances in a manner to prevent contamination of the stream. With the increased use of our public water there has been a steady decline in the number of cases of typhoid fever, as well as all other forms of disease. This abundant supply of good drinking water, and the improved sanitary condition of our streets, are contributing largely to restore our town to its erstwhile condition of primitive healthfulness.

James O. Bullock,
Secretary Board of Health.

REPORT OF THE BIOLOGIST,

DR. WM. R. STOKES.

Dr. John S. Fulton, *Secretary of State Board of Health.*

Dear Sir: I hereby respectfully submit my report on the work performed in the Bacteriological Laboratory during that portion of the year beginning on June 1st and ending December 31, 1898.

In order to meet the requirements of chapter 346, Acts of 1898, it was decided to adopt a series of methods by which physicians of the State could submit specimens for examination to the central laboratory in cases of suspected typhoid fever, tuberculosis, diphtheria, malaria, rabies, and cerebro-spinal meningitis. Certain conveniently located drug stores were selected in various parts of the State as distributing depots for the laboratory supplies.

In order to describe the methods adopted and the results obtained therefrom it will be convenient to comment separately upon each disease.

Typhoid Fever.

Dr. Westbrook, Bacteriologist to the State Board of Health of Minnesota, was one of the first to demonstrate a scientific method by which the dried blood of suspected cases of typhoid fever could be accurately weighed and diluted. His method is as follows: The blood is collected on a slip of aluminum foil, which is then folded up, and dried blood is easily scraped from the foil. These dried scales can be weighed, and accurate dilution with distilled water can be made. The State Board of Health has improved upon this method by using an aluminum box. The directions which are sent along with the mailing case will explain the method.

State Board of Health of Maryland.

Directions for sending Specimens of Blood for the VIDAL TEST for TYPHOID FEVER.

Wash the Patient's ear with clean water, and dry it with a fresh towel. Pinch the lobule of the ear firmly between your finger and thumb, and with a medium sized new needle stab into the lobule about half an inch. Then squeeze out 5 or 6 drops of blood on the inside of the lid of the aluminum box. Lay the lid down and turn a tumbler over it.

Fill out your card of information, and when this is done put the box on the lid, return both card and box to the mailing case, and forward to us.

The card of information required is as follows:

TYPHOID FEVER.

Are you up to date with your reports of births, deaths and infectious diseases?

Patient's name.......... .... Address ....

Age........	male female	white colored	married single	Occupation	How long sick? ....

Ever had typhoid before?........................ .... What is your own diagnosis? ....

Symptoms: Strike out with a pen those not observed.

Fever, nosebleed, rose spots, diarrhœa, bloody stools, delirium, right iliac tenderness, gurgling, palpable spleen, bronchitis, chill, sweating.

Doctor's name.. ....

Address............ ....Reply by mail or telegraph

Ag. Mot.	Ag. Mot.	No.	Ag. Mot.	
T. T.	T. T.		T. T.	Recovered.
Dil.	Dil.		Dil.	Died.

This card is perforated for permanent preservation in a filing cabinet. One milligram of the dried blood is carefully weighed out, and one-tenth of a cubic centimeter of sterile distilled water is added, making a dilution of 1-100. If this should fail to give the reaction, a dilution of 1-50 is made. (Typhoid blood having a dilution of 1-1000 has been found in one instance in our practice to give the typhoid reaction.) The specimen is kept under observation for two hours, unless a reaction occurs in a shorter time.

Fresh cultures of typhoid bacillus are maintained by transferring the bacillus daily to fresh neutral beef tea, and allowing it to grow at room temperature. We have found that cultures grown in this way seldom if ever give misleading reactions. We believe that the dilution method further reduces the chances of error.

Results of examinations are sent to physicians on a blank of which a copy follows. Our laboratory record is made upon the perforated card illustated above, which is filed as part of the permanent records of the State Board of Health. All the blanks for typhoid fever are on green paper.

STATE BOARD OF HEALTH OF MARYLAND.

BIOLOGICAL LABORATORY.

City Hall Annex.

Laboratory No...........

BALTIMORE, ...

DEAR DOCTOR:

The test made with a specimen of blood from

....

gave did not give the typhoid reaction.

WM. R. STOKES, M. D., *Bacteriologist.*

The reaction characteristic of typhoid fever is not likely to occur earlier than the fifth day of the disease.

The reacting substance persists in the blood for a considerable time after recovery. One must therefore be sure that a previous attack has not happened within two years.

"A negative result, obtained with the serum of a case of suspected typhoid, affords a presumptive evidence against a diagnosis of typhoid fever, but this is only a probability, especially if the examination has been made in the first few days of the disease. The examination should then be repeated during the next few days. The presumption that a case in which a negative result has been obtained, is not typhoid, becomes stronger as the stage of the disease becomes more advanced." (Widal.)

In doubtful cases we will examine later samples of blood at intervals of about two days, until the diagnosis is settled.

Please let us know if the course of the case shows anything different from what our findings would lead you to expect.

Tuberculosis.

In order to meet the regulations of the United States Postal Service a number of metal mailing cases were purchased in which were placed small screw-capped glass jars, surrounded by cotton. Directions and blanks for physicians were placed in the cases of which copies are appended.

STATE BOARD OF HEALTH OF MARYLAND.

Directions for Sending Sputa for the Diagnosis of Tuberculosis.

WE DO NOT want the mouth secretions nor the mere results of clearing the throat. DEEP COUGHING brings up the material needed for examination. If deep coughing does not bring up anything at the first trial, wait until something is raised from deep in the chest, and spit that into the bottle. Unless the effort is too great a tax, let the patient cough up enough to half fill the vial.

NEXT SCREW THE CAP on tightly, and wash the outside of the bottle thoroughly before you put it in the mailing case.

THEN FILL OUT the information card, pack the case just as you received it, and mail.

The perforated card of information for file at the laboratory is as follows:

TUBERCULOSIS.

Are you up to date with your reports of births, deaths and infectious diseases?

Address.

Patient's name..

Age........	male female	white colored	married single	Occupation	How long sick? ....

Symptoms. Strike out with a pen, symptoms not observed.	fever, cough, hoarseness, hemorrhage, sweats, emaciation, diarrhœa, suppressed menses.

Associated with a consumptive?	at home at school at work	father, brother, wife, daughter, mother, sister, husband, son.

Ever had pleurisy?......... Joint disease?...... Swollen or suppurating glands?....

Address

Doctor's name.. ....

....

....	....	....	....	Recovered Died

Results of examination are sent upon the next blank.

STATE BOARD OF HEALTH OF MARYLAND.

BIOLOGICAL LABORATORY.

City Hall Annex.

Laboratory No. BALTIMORE.................................

DEAR DOCTOR:—The examination of sputa from

....

shows does not show the presence of tubercle bacilli.

JOHN S. FULTON,
Secretary.

WM. R. STOKES,
Bacteriologist.

If we report that no tubercle bacilli were found, we may have failed to find them because they were exceedingly few, or because your patient did not cough up anything from a tuberculous area, or because your patient has not tuberculosis. Having found them once, the diagnosis is made, but if they are not found, you should not give up your own well-grounded suspicions until several examinations have failed to reveal the tubercle bacillus.

All the blanks used for tuberculosis are printed on buff paper.

These tests for tuberculosis have enabled us to demonstrate this disease in a number of cases throughout the State. It is believed that this test is of value not only in confirming the physician's opinion in cases where obvious physical signs and symptoms exist, but also in detecting the disease in its earlier stages when it can hardly be recognized clinically.

If proper curative measures are adopted in the beginning of consumption and more favorable climates are sought, a patient can often be cured, who would otherwise die of this disease. The bacteriologist would therefore request that all physicians use this test early in all suspicious cases.

Diphtheria.

The mailing cases for diphtheria contain a sterile swab in a glass tube, and the following directions for the physician are given:

STATE BOARD OF HEALTH OF MARYLAND.

Directions for Sending Diphtheria Specimens.

NO ANTISEPTIC should be used in the throat for several hours before the culture is taken.

The patient should be placed in a GOOD LIGHT and kept quite still.

Depress the tongue, and when a GOOD VIEW is obtained take the swab from the tube and rub it over the membrane or inflamed area. If the symptoms point to laryngeal obstruction, no membrane being visible, pass the swab down past the epiglottis if you can, remembering that reckless or rough manipulation may dislodge the cotton into the larynx.

When the swab, full of the infected material, is taken out of the mouth, replace it in the tube, and put the cotton plug back in the mouth of the tube. Fill out the card of information, repack the case and mail.

A NEW CULTURE should be sent every five or six days in order to determine when the case ceases to be infectious.

The laboratory card is as follows:

DIPHTHERIA.

Are you up to date with reports of births, deaths and infectious diseases?

Address.

Patient's name ....

	male	white	Occupation ?	How long sick ?	Do you think it diphtheria ?
Age....	female	colored	....	....	....

How infected ?...

	Where	Neck glands swollen ?	Skin eruption ?
Is there membrane ?....	....	....	....

	How much ?	How long since an antiseptic was used in the throat ?..................
Antitoxin used ?..........	....	

Address

Doctor's name...

Reply by mail or telegraph ?...

....	....	....	....	....
....	....	....	....	Died Recovered

The report blank is as follows:

STATE BOARD OF HEALTH OF MARYLAND.

BIOLOGICAL LABORATORY.

City Hall Annex.

Laboratory No.

BALTIMORE,........................ ....

DEAR DOCTOR:

The examination of the culture from the throat of

....

shows does not show the presence of diptheria bacilli.

Other cultures will be cheerfully made.

WM. R. STOKES, M. D., *Bacteriologist.*

Failure to find the diphtheria bacillus may mean:

A. That the culture was not properly made. Please carefully follow the instructions.

B. The growth on the medium was so scanty that it is probable that some antiseptic was used in the throat shortly before the specimen was taken.

C. The culture was badly contaminated. The swab must have touched something else besides the throat.

D. The infection may be in the larynx, and the swab may not have touched the membrane.

If there is any doubt about the case, send us other specimens.

All the blanks in the diphtheria series are printed on blue paper.

It has already been pointed out in a circular to the physicians of the State that it would be unwise, especially in obvious cases of diphtheria, to defer the use of antitoxine until a positive report has been received from the laboratory. But the test for diphtheria has further uses. It is now known that virulent diphtheria bacilli, capable of producing the disease in others, will often persist in the throat for several weeks after all other manifestations of the disease have disappeared and the patient has apparently recovered. Diphtheria is spread, and many children are infected by convalescent cases in which the diphtheria bacillus still exists unsuspected by physician and friends. A patient should never be permitted to mingle with the public until two successive negative cultures have demonstrated that the throat is free from diphtheria germs. It has also been shown that children who have been housed with diphtheria cases will at times give pure cultures of the diphtheria bacillus from their throats, without showing any symptoms of the disease. The value of our methods in forecasting attacks of diphtheria in persons who were at the time of examination apparently well, was well illustrated in the small diphtheria epidemic near Marlboro, Prince George's county, where we were able to detect the diphtheria bacillus in a child whose illness did not begin until nearly a week after our examination.

This bacillus is not a normal inhabitant of the throat, since Park only found virulent diphtheria bacilli in one per cent. of the healthy throats examined in New York city. The few healthy persons in whose throats diphtheria bacilli were found lived in houses where cases of diphtheria existed. This has been found to be true in many other cities, and in most of these places a law has been passed which excludes a case of sore throat from school and prevents the return of all children from houses in which diphtheria has existed until negative cultures have been obtained from all of their throats. These precautions should be carried out in all large communities where diphtheria occurs.

Malaria.

The requisites for sending blood to be searched for the malarial parasite are contained in the same mailing case used for typhoid specimens. This series of blanks on pink paper is like those already illustrated. The directions to physicians are as follows:

For specimens of blood to be examined for the MALARIAL PARASITE you will find glass squares in a pill-box. Handle them by the corners between the finger and thumb, being careful not to touch either plane service. Clean the lobule of the ear and puncture as for a typhoid specimen, but do not press out so large a drop. Wipe off the first blood, and then squeeze out rapidly a second small drop upon the centre of one of the glass squares, and turn it over on top of another glass square in such a manner that the blood will spread out in a thin layer between the two slips. Do not press the glasses together. If you have not been so slow as to allow the blood to thicken, it will spread immediately under the weight of the upper glass. When the drop has spread, at once slide the two glasses apart. Now you have a thin layer of blood on each slip. Lay them both down wet side upwards to dry. Turn a tumbler or the box lid over them to keep dust away while you are filling out the information card.

The malarial parasite is easiest found in the systemic blood about an hour or so before the chill. Quinine drives them from the blood, and they are not likely to be present in considerable numbers in a patient who is taking full doses. If convenient, no quinine should be given for twenty-four to thirty-six hours before taking the specimen. The malarial organism is most abundant in the summer agues. In certain rare cases of malarial fever the organism does not circulate freely in the systemic blood, though specimens aspirated from the spleen may show it in abundance. Failure to find the organism does not therefore absolutely exclude the diagnosis of malarial infection, though a careful hunt through several specimens ought to reveal it if present.

Epidemic Cerebro-Spinal Meningitis.

The clinical picture of meningitis is, as a rule, easily recognized by physicians, but the epidemic form is not always easily distinguished from the other forms. Typhoid fever sometimes strongly simulates cerebro-spinal meningitis, and the severe diarrheal diseases of children often develop cerebro-spinal symptoms.

The positive diagnosis of epidemic cerebro-spinal meningitis rests upon the discovery in the spinal fluid of the *diplococcus intracellularis.* Puncture of the spinal canal for the withdrawal of this fluid is not, in competent hands, a dangerous procedure. Indeed it is said to be sometimes beneficial. We do not recommend the operation to those physicians who have not previously learned it from a good operator. The diagnosis by spinal puncture after death may, however, be very useful in the management of later cases. In persons over fifteen years old suspected to have cerebro-spinal meningitis, it is well to send, besides the the spinal fluid, a specimen of dried blood for the typhoid test.

If it is desired to make a bacteriological diagnosis of epidemic cerebro-spinal meningitis write and ask us for special culture tubes.

Spinal puncture is made with a sterile hypodermic needle. The syringe can be sterilized by filling it with a 5 per cent. solution of carbolic acid, and allowing it to remain in the syringe for five minutes. Then wash out the carbolic acid with several syringefuls of water which has been recently boiled. The skin over the second and third lumbar vertebræ should be sterilized with 5 per cent. carbolic solution, and then thoroughly washed with sterile water. The needle should be at least an inch in length. Make your puncture in the median line between the second and third spinous processes of the lumbar vertebræ. When your needle gives the sensation of being in a free cavity, draw the piston. If the fluid does not follow the piston, move your needle gently in and out, stopping as soon as the fluid appears. When the syringe is full, withdraw the needle, and squirt a portion of its contents over each of four or five culture tubes. Never remove the cotton plug from the culture tube until you are ready to introduce the fluid, and then replace it at once, without laying it down anywhere, and without handling it unnecessarily.

The organism of epidemic cerebro-spinal meningitis has been demonstrated in cultures from three out of five cases, in which this disease was suspected in Baltimore.

Rabies.

It has been demonstrated that rabies is rather prevalent in Maryland. Not only does it exist among dogs, but the work of Dr. Clement, the State Veterinarian, and of the State Board of Health has shown that dogs often infect by biting such animals as cats, cows, sheep and horses. A number of cases of rabies in human beings have also occurred in Maryland, and it is often important in order to save a human life that an examination be made of the suspected animals. The presence of the rabic virus in the brain and cord can usually be detected within two weeks, and as the disease does not develop in man for at least a month, this offers time for treatment. All animals showing symptoms of this disease, particularly if they have bitten persons, should be killed and their heads sent packed in ice to the laboratory. If the suspicion of rabies is pretty strong, it is not prudent to postpone treatment until our laboratory results are made known, since we can never determine the matter within ten days, and may be as long as thirty days. The treatment of a bitten person must be begun at least sixteen or eighteen days before the attack of rabies may be expected.

Of the two cases of rabies demonstrated since July 1st in our laboratory, one occurred in a cat and the other in a cow.

What the Pasteur treatment may be expected to do is indicted in the following, for which we are indebted to Dr. N. G. Keirle, director of the Pasteur Department, City Hospital, Baltimore:

I. Rabid bites of all grades on face and neck, without treatment would be fatal in about 30 per cent. of cases. Treated by Pasteur's method the fatal cases would be a little over 1 per cent.

II. Severe and multiple bites on face and neck, untreated, would be fatal in from 40 and 90 per cent. of cases. Treated under unfavorable circumstances, 6 per cent of these cases would result fatally. Unfavorable circumstances are delay in beginning treatment, late or inefficient cauterization of the wounds, alcoholic intemperance, &c.

III. Severe and multiple bites on bare parts of the body and limbs are fatal in about 30 per cent. of instances, untreated.

Treated the fatality would be less than 1 per cent.

IV. Bites through clothing give a mortality between 6 and 18 per cent., if not treated.

Treated these bites prove fatal in not more than one-tenth of 1 per cent of cases.

The services of the biologist to physicians are not meant to be a gratuity to physicians, but should, the State Board of Health believes, lead to mutually helpful relations between the health officials and private practitioners. The biological work is done under the direction of the State Board of Health, and may be stopped at any time in any case. It will be observed that each of the information cards sent out with the mailing cases for physicians' use begins with the question "Are you up to date, etc." The obvious purpose of this inquiry is to impress upon physicians that some reasonable reciprocity is expected. The order of the State Board of Health on this subject to the biologist is as follows:

BIOLOGICAL LABORATORY ORDER NO. 1.

When a request for biological examination is received from any one who omits to answer the first question on the card, "*Are you up to date with your reports of births, deaths and infectious diseases?*," or if this question is answered in the negative, the biologist shall at once address the sender of the specimen a communication informing him that the result of the examination may be withheld until the arrears of birth and death certificates are made up, or until a written answer is received stating that the question should have been answered in the affirmative. The biologist shall not, however, delay the examination in such a case, but shall make and report the same to the Secretary of the State Board of Health, who shall dispose of it according to his own discretion.

WM. H. WELCH, M. D., Pres. pro tem.
Dec. 15, 1898. JOHN S. FULTON, M. D., Sec.

In obedience to this order, it is the practice in this laboratory, whenever a physician sending a specimen fails to answer this first question in the affirmative, to mail him a postal card advising him that his specimen may not be reported upon unless he at once makes up his arrears of returns of births, deaths and infectious diseases. The report in such a case will be inevitably delayed until the matter can be laid before the executive officer of the board. Whether the report will be entirely withheld or not depends upon the greater or less urgency of the investigation from the public health point of view. The personal and private interest of the physician making such a request will receive consideration precisely in proportion to the interest manifested by the doctor in the inquiries of the State Board of Health. Neglect of their reporting duties may therefore result not only in inconvenience, but in actual injury to physicians. For any harm that may result to any citizen from this ruling the State Board of Health is in no sense responsible, since every physician may, with very little trouble, keep himself qualified to call upon the State Board of Health for such services. It is certainly more important to conserve the larger interests of the State, which the laws upon vital statistics and infectious disease are meant to protect, than to serve the private interest of any physician who neglects his wider though less urgent duties.

Examinations of Blood for Typhoid Reaction.

Positive reaction	75
Doubtful reaction	5
Negative reaction	24
Total	104

Examination of Sputum for Tuberculosis.

Tubercle bacilli present	11
Tubercle bacilli not present	16
Total	27

Examinations for Suspected Diphtheria.

Positive cases	24
Negative cases	33
Total	57

Examination of Blood for Suspected Malaria.

Positive cases	2
Negative cases	26
Total	28

Examination for Suspected Rabies of Animals.

Positive cases	2
Negative cases	0
Total	2

Biological Examination of Water.

In order to test the purity of drinking water from a bacteriological standpoint a sample is first examined in order to determine the number of bacteria in one cubic centimeter. The specimen is then examined in order to find out whether the colon bacillus is present or absent. This organism (the colon bacillus) is a normal inhabitant of the intestines, and when present it is direct evidence of intestinal contamination. One cubic centimeter of water is usually tested, but if this proves negative the test is applied to fifty cubic centimeters of water.

Although the presence of large numbers of bacteria together with the colon bacillus has usually agreed with the chemist's results and the inspector's report, in demonstrating pollution in streams and wells, this has not always been the case. Where contamination is strongly suspected the water should not be regarded as pure until several examinations have failed to discover the colon bacillus in large quantities of water, such as fifty to one hundred cubic centimeters.

The bacteriological examination of drinking water has been useful in explaining and locating the cause of several epidemics of typhoid fever. On October 15th, Dr. J. L. Noble, Health Officer for Caroline County, stated in a letter to the State Board of Health that a number of cases of typhoid fever existed in Preston, Md. Samples of water were examined from six wells. Out of the three wells supplying houses in which typhoid fever was present the colon or intestinal bacillus was demonstrated in two. This organism was not found in the three wells supplying non-infected houses.

Lord and Ocean Epidemic.

On October 31st Dr. C. Brotemarkle, of Lonaconing, reported nine cases of typhoid fever at Lord, a village of 300 inhabitants. This town is at the head of George's Creek Valley, and it obtains its drinking water from two different sources. A pipe line brings water from a cemented covered spring to the town. This was found to contain only seven colonies in one cubic centimeter, and no colon bacilli were found in one nor in fifty cubic centimeters of the water. This was pronounced a good drinking water, and it is very probable that no cases originated from this source. Four of the nine cases obtained their drinking water from Lehr's spring, and the bacteriological examination showed that 504 bacteria were present in one cubic centimeter, and the colon or intestinal bacillus was found in fifty cubic centimeters of the water. The rest of the cases were not traced in so satisfactory a manner, as the colon bacillus was not demonstrated, but the three other springs in use in the village contained 437, 936 and 1,188 bacteria to the cubic centimeter. These are excessive numbers for good drinking water, which should as a rule contain from ten to fifty bacteria. Dr. B. advised the use of the pipe-line water, and the abandonment of the local springs.

On November 20th Dr. Brotemarkle reported four cases of typhoid fever at Ocean, a town several miles below Lord. This place obtains its drinking water by means of a pipe-line whose intake is situated in a small stream at a point two miles from Lord. This stream, called Run Flondyke, begins some miles above Lord, and runs directly through the town, thereby inviting pollution from privies, surface drainage and other sources of contamination. An examination made from the run before passing the town showed 127 bacteria to the cubic centimeter, but no colon bacilli in fifty cubic centimeters of water. A sample taken from the same stream at the Ocean intake pipe after the water had received the sewage from Lord showed 1866 bacteria to the cubic centimeter and the presence of the colon bacillus in fifty cubic centimeters of water. The development of the typhoid fever in Ocean, following its presence in Lord, can be satisfactorily explained by the assumption that the germ of typhoid fever must have found its way from the intestines of some of the fever patients at Lord into Run Flondyke, and that persons in Ocean drinking this water became infected with typhoid fever.

We are indebted to Dr. C. Brotemarkle for two excellent diagrams, which are here reproduced. The first one (Plate I) shows the valley of George's creek from its source to its confluence with Potomac river, with the relative position of the towns.

Run Flondyke is also shown from its source to termination in George's creek. The points of the compass are reversed in this diagram.

The second diagram (Plate II) shows the village of Lord, with its water supplies and the infected houses. It also shows the point in the stream from which the Ocean water supply is taken.

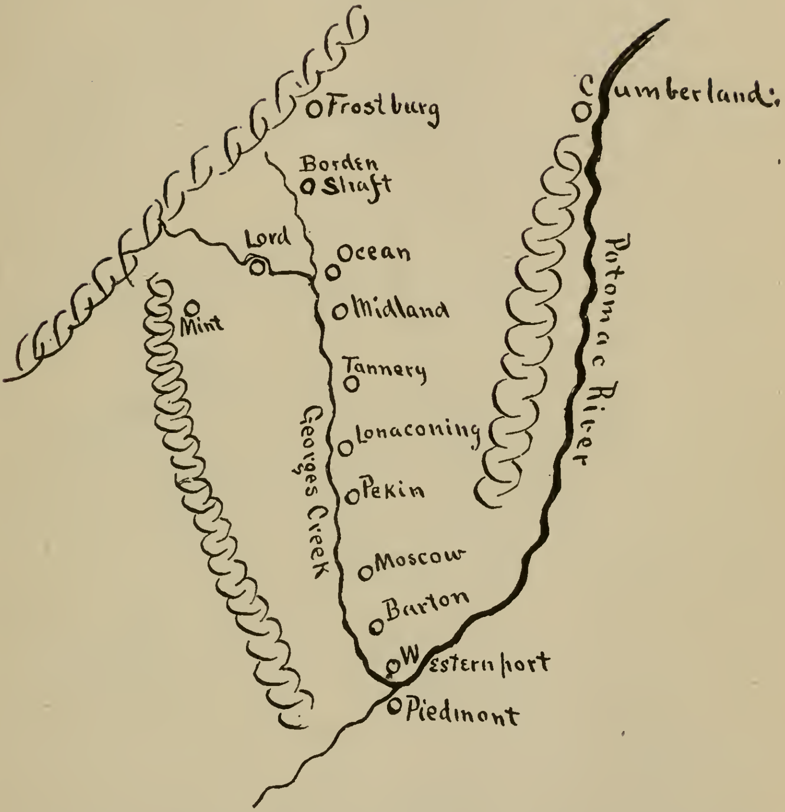


PLATE I.—The valley of George's Creek and the Potomac Valley from the George's Creek junction to Cumberland. The small stream rising in the mountains, flowing past Lord, and emptying into George's creek near Ocean, is Run Flondyke. (The points of the compass are reversed. Read "north" at the bottom.)

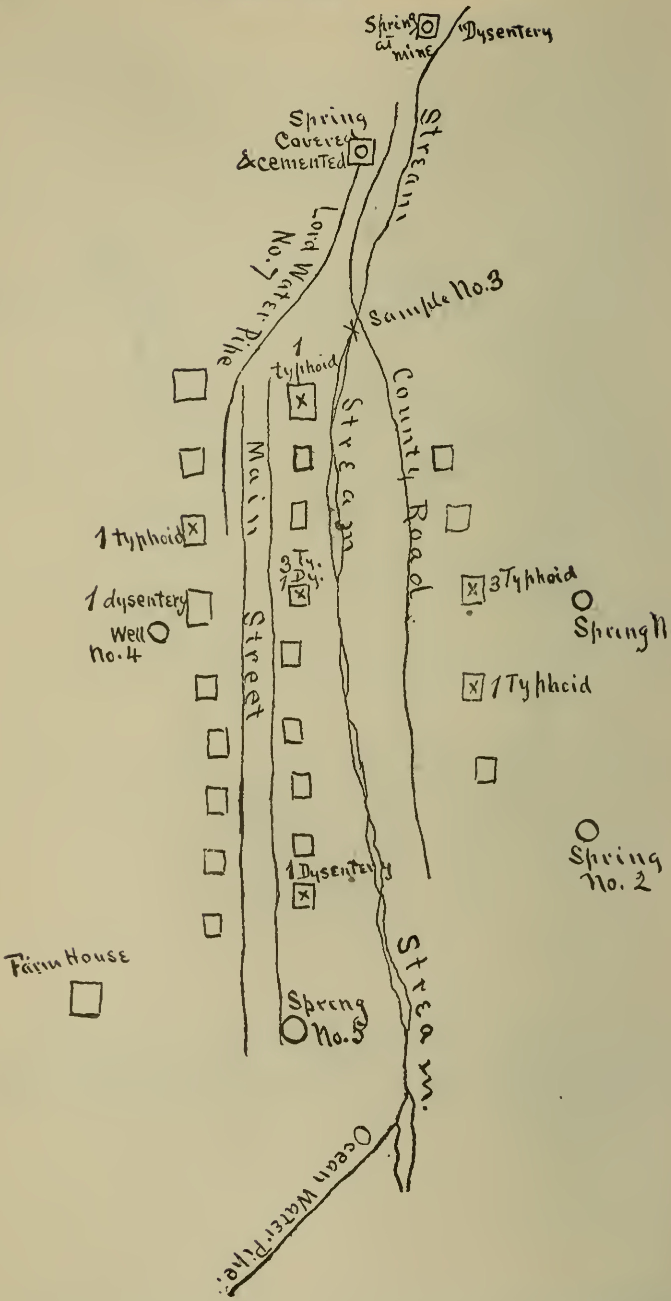


Plate II.—The village of Lord, showing Run Flondyke as far as the intake of Ocean waterpipe. No colon bacillus at Sample No. 3. Colon bacillus present just above waterpipe.

Centreville Water Supply.

The water supply of this town is derived from a "running stream passing through fields and meadows, subject to surface drainage, and almost every form of pollution possible in unprotected water sheds." An examination made at the request of some of the citizens gave the following results :

	Colonies per c. c.	Colon bacillus in 1. c. c.
Stream one-fourth of mile above reservoir.	780	Present.
Stream just before entering reservoir.	1596	Not found.
Reservoir.	984	Present.
Spigot from town supply.	708	Present.

Although the numbers of bacteria are about what is found in most surface streams, yet the presence of colon bacilli all along the route, showed that the water at any time might become the carrier of water-borne disease.

A Water-Works Accident on the Fourth of July.

A small suburban community which happened to be under the observation of the State Board of Health during last summer, (1898) obtains its water by pumping from a deep well into a tank, from whence it is distributed to the cottages. The tank holds only one summer day's supply for about 400 people. Each cottage in this community has its own subsurface irrigation field for the disposal of house waste, and the well is about one-third of a mile from the nearest dwelling.

On the 30th of June a bacteriological examination of this water showed that there were eighty bacteria present in one cubic centimeter of water. No colon bacilli were found.

On the 4th of July, an accident having disabled the pump, the manager had recourse to another well which had not been used for more than a year. A smaller pump was connected with this well, and the tank was filled with the stagnant water. The entire population of the community, about three hundred, remained at home to celebrate the holiday, and the tank was emptied during the day and night. On the 5th of July the regular supply was again connected, and used from that time forward.

About the tenth of July, five or six days after the stagnant water had been taken, twenty-five persons were sick with gastrointestinal disorders, of varying degrees of severity. One had fever, bloody stools, and loss of weight ; two had delirium, chills, fever, and diarrhea. Several others had fever, while all had diarrhea. All recovered in from three to seven days.

An examination of the water from the well which had been used on July 4th, showed 4,100 bacteria in one cubic centimeter, and the colon bacillus was present in the same quantity of water. The source of the colon bacillus was not discovered, but the top of the well, about eight feet in diameter, was covered with loose plank, and this suggested that the water might easily be polluted in a direct manner from the surface.

A reasonable explanation of this outbreak of diarrhea would seem to be that persons, accustomed to drink water containing eighty bacteria in each cubic centimeter, were poisoned when suddenly obliged to drink a water containing 4,100 bacteria in each cubic centimeter. Most of the population were able to withstand this unusual bacterial invasion, but the intestinal tracts of twenty-five, out of three hundred persons, reacted more or less violently.

On July 27th two young ladies were taken sick, and on August 1st a third began to be ill. All three of these cases proved to be typical attacks of typhoid fever. Two of them showed the Widal reaction. The third would not submit to a blood examination. Careful inquiries were made of the movements of these three persons during the previous three weeks. One of them never drank milk, though she ate ice cream. The two who did drink milk obtained it from different sources. One had returned from Norfolk about four weeks before her illness. One remembered having taken a glass of soda water at Pikesville sometime within three weeks. Another had taken a glass of milk at the Woman's Exchange, in Baltimore. Thus by close questioning we were able to determine that the only probable source of infection to which they were all exposed was the drinking water furnished on the Fourth of July.

A study of this water-works accident occuring on the day devoted by the nation to fireworks accidents, seems to show rather clearly that the intestinal disorders of indefinite pathology may be produced by drinking water.

The period of incubation in two of the three cases of typhoid fever seemed to have been twenty-two days, and in the third case possibly two days longer. The period of incubation of typhoid fever can of course only be determined within rather wide limits, since its initial symptoms are very apt to escape observation, and the cases are very rare in which the exact date of invasion can be fixed. In these three cases we believe that the date of infection was pretty clearly proven.

TABLE OF WATER EXAMINATIONS.

Tap, Stream or Well.	Date.	Colonies per C. C.	Colon Bacillus.	Quality.
Cheltenham Colored Reformatory, main building, 1	Aug. 27.	Aerobic, 187	None in 5 C. C.	
Pump at building 2	“ 27.	“ 220	“ “	Fair.
Pump at building 3	“ 27.	“ 104	“ “	“
Pump at building 4	“ 27.	“ 1,704	“ “	Bad.
Five, boiler house pump	“ 27.	“ 1,355	“ “	“
Six, barn pump	“ 27.	“ 625	“ “	Fair.
Seven, kitchen spigot	“ 27.	“ 432	“ “	“
Eight, Ice from pond	“ 27.	“ 55	“ “	
House of Correction	“ 26.	“ 454	“ “	
		Anaerobic 255		
Hydrant	“ 29.	Aerobic, 762	“ “	
Hydrant of W. Malcolm	“ 30.	“ 402	“ “	
Pump at Perryman, Md	“ 30.	“ 528	Present in 1 C. C.	
C. W. Biddison, artesian well	“ 30.	“ 1,412	None in 5 C. C.	
Well of Myrtle Chesney, Perryman, Md	“ 30.	“ 662	“ “	
Property J. H. Stier, at Perryman, Md	“ 30.	“ 824	“ “	
Gwynn Oak Park, (well).	“ 31.	“ 100	“ “	
Gwynn Oak Park, park spring	“ 31.	“ 186	“ “	
Gentleman's Driving Park	Sept. 1.	“ 198	“ “	
Gentleman's Driving Park, 2	“ 1.	“ 86	“ “	
Spring at Lakeside Park	“ 1.	“ 13	“ “	
Spring at Lakeside Park, 2	“ 1.	“ 4	Present in 1 C. C.	
Colosseum Park, (well)	“ 2.	“ 90	None in 5 C. C.	Good.
Timonium, (well,) 18 feet below surface	“ 6.	“ 102	“ “	
“ “ 20 feet below surface	“ 6.	“ 516	“ “	
“ “ 28 feet below surface	“ 6.	“ 95	“ “	
“ “ 21 feet below surface	“ 6.	“ 288	“ “	
House of Reformation, Cheltenham, Md., (spring)	Sept. 10.	“ 59	“ “	
Chestertown, (well at pump station, town supply)	“ 14.	“ 21	“ “	
Reservoir at Chestertown	“ 14.	“ 198	“ “	

TABLE OF WATER EXAMINATIONS—*Continued.*

TAP, STREAM OR WELL.	DATE.	COLONIES PER C. C.		COLON BACILLUS.	QUALITY.
Pump of Fitten, 60 feet from Chestertown Reservoir 65 feet deep	Sept. 14.	Aerobic,	100	None in 5 C. C.	....
Pump at J. Smith's, 60 feet from Chestertown reservoir, 67 feet deep, through clay, red sand, rock and down to coarse gravel	" 14.	"	39	" "	....
Washington College pump, Chestertown	" 14.	"	3,726	" "	....
Dr. Dodd's pump at Chesterthwn, 60 feet deep,) 70 feet from two closets, poultry and stables.	" 14.	"	1,458	" "	....
Joshua Thomson, Chestertown, 30 feet deep, through clay to gravel, and 60 feet from two surface closets	" 14.	"	916	" "	....
Joshua F. Hindes, Govanstown	" 15.	"	14	" "	....
C. D. Cherbonnier, Timonium, Baltimore county, (well 22 feet deep).	" 15.	"	2,880	" "	....
Water from spring on F. W. Brune's place, Baltimore Md. which is pumped into a cemented reservoir	" 15.	"	720	" "	....
Centreville reservoir.	" 21.	"	984	Present in 1 C. C.	....
Snyder's well, Centreville	" 21.	"	57	" "	....
Stream one-quarter mile above Centreville reservoir	" 21.	"	780	" "	....
Stream just before entering reservoir at Centerville	" 21.	"	1,596	None in 5 C. C.	....
Forman's spigot, Centreville, town supply.,	" 21.	"	708	Present in 1 C. C.	....
Geo. Zink, well at Cockeysville	" 27.	"	648	" "	....
Oakland Mill, (Wm. Whipps)	" 29.	"	103	" "	....
(Sam. Whipps,) Oakland Mills	" 29.	"	91	None in 5 C. C.	....
Oakland Mills, (John Smallwood)	" 29.	"	546	" "	.. ..
Thos. Gattin, Ellicott City	" 29.	"	779	" "	....
Mrs. Casey Tabb, Oakland Mills	Sept. 29.	"	498	None in 5 C. C.	....
Ernest B. Horn, Mt. Airy, Md., from pump	Oct. 10.	"	137	" "	....
Ernest B. Horn, water from tank	" 10.	"	——	" "	....
Ernest B. Horn, samples of, in	" 10.	"	159	" "	....

Tributary of Jones' Falls, Mr. Hare's property, near Brooklynville	Oct.	13.	Aerobic,	1,800	None in	5 C. C.	....
Jones' Falls stream at, Brooklyn Mill	"	13.	"	774	"	"	....
Geo. Brown, 300 feet below, (a cow yard)	"	13.	"	3,288	"	"	....
Geo. Brown, 100 feet below, (card yard)	"	13.	"	1,116	"	"	....
Tributary adjoining Rockland station	"	13.	"	600	"	"	....
Cockey's Tavern, Falls' road	"	13.	"	2,502	"	"	....
Mrs. Zink, of Falls' road	"	13.	"	12,000	"	"	....
Stream back of Rockland Mills	"	13.	"	16,480	"	"	....
City water at Hagerstown, Washington county	"	15.	"	322	"	"	....
A. W. Sisk, Preston, Md, driven well 55 feet deep.	Nov.	4.	"	4	"	"	....
Geo. Lecates, Preston, Md., bricked well 60 feet from cemetery	"	4.	"	265	"	1 C. C.	....
J. L. Noble, Preston, Md., driven well 48 feet deep	"	4.	"	8	"	5 C. C.	....
J. H. Ledmun, Preston, Md., (well)	"	4.	"	640	"	"	....
Walter Gillespie, Govanstown, Md., water from pump.	"	4.	"	742	"	1 C. C.	....
J. B. Fletcher, Preston, Md., (well)	"	4.	"	5,652	"	5 C. C.	....
Ora. Patton, Preston, Md., (brick well)	"	4.	"	277	Present in	"	....
Walter Todd, Preston, Md., (well)	"	4.	"	786	"	1 C. C.	....
Geo. Merriman's farm, (below barn yard)	"	14.	"	28,000	None in	50 C. C.	....
Geo. Merriman's farm, on Gunpowder river, opposite barn	"	14.	"	18,000	"	"	....
Geo. Merriman's farm, above barn	"	14.	"	25,000	"	"	....
Lehr Spring	"	15.	"	504	Present in	"	....
Perkin's Spring	"	15.	"	437	None in	"	....
Run, Flondyke or Lord	"	15.	"	127	"	"	....
Cherry, (well)	"	15.	"	936	"	"	....
Bois Spring, Lord	"	15.	"	1,188	"	"	....
Ocean No, 1, (pipe line)	"	15.	"	1,866	Present in	"	....
No. 7 Lord, (pipe line)	"	15.	"	9	None in	"	....
No. 8 Ocean No. 7	"	15.	"	996	"	"	....
Geo. Merriman's, below barn yard on the Geo. Smith property	Dec.	2.	"	20,197	"	"	....
Geo. Merriman's, above barn yard	"	2.	"	——	"	"	....

Water Examinations.

The routine work of the water examinations shown in the preceding tables has been done by E. M. White, Laboratory Assistant, who also conducts the ordinary correspondence with physicians, and keeps the laboratory records.

Respectfully submitted,

Wm. R. Stokes, M. D.,
Biologist.

REPORT UPON VITAL STATISTICS.

How the Statistics Are Collected.

Local registrars are supplied with two books—one a register of deaths and the other a register of births. Each of these books consists of two hundred pages, admitting seven records on each page, fourteen hundred to each book. The law requires that these books shall, if possible, be kept in a fire-proof safe. They are of a size convenient for storage in an ordinary safe. Transcripts are made in these registers of death and birth certificates in the order of their receipt. There is no alphabetical index.

The blanks for certificates of death are printed on salmon-colored library cards, perforated for filing. The registrars have each a japanned iron guide rod box in which to keep the certificates returned. Before the tenth of each month all of the certificates in his possession are sent by mail to the State Registrar. The birth certificate blanks are printed on white library cards, and are filed, recorded and returned in the same manner as the "death" cards. These cards are distributed to the local registrar in packages of fifteen or twenty, each package enclosed in an envelope. On the back of the envelope the manner of filling out a certificate is illustrated for the guidance of those whose duty it may be to certify.

Reproductions of the headings of each register are on the next page.

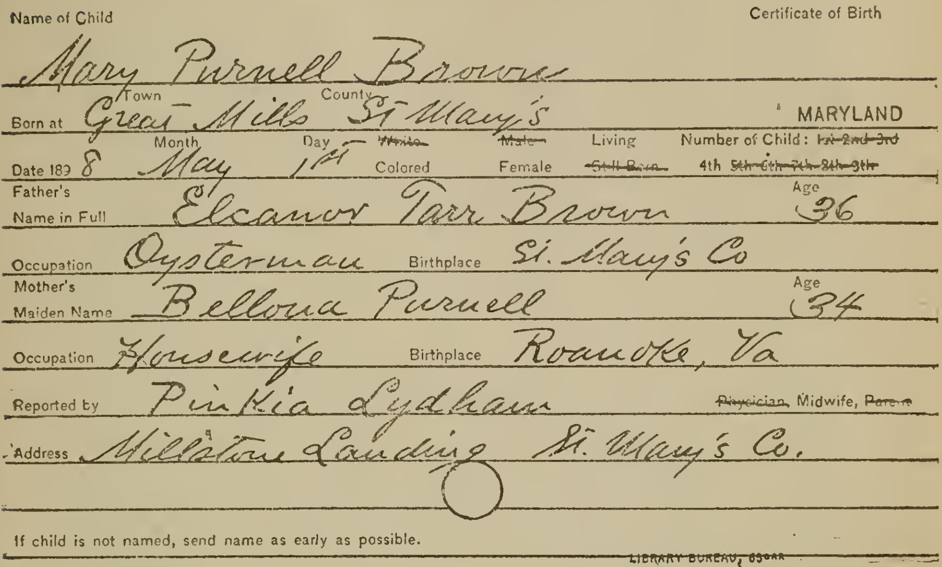
Register of Births in County, Maryland.

Name of Child
Town or P. O. | Month Day | White Male Living | No. of Child: 1st 2d 3d
Colored Female Still Born | 4th 5th 6th 7th 8th 9th
Born at | On
Father's Name in Full | Age | Occupation | Birth Place
Mother's Maiden Name | Age | Occupation | Birth Place
Reported by | Physician, Mid-Wife. | Address

Register of Deaths in County, Maryland.

Name in Full
Town or P. O. | Month Day | Y. M. D. | Native of | Occupation
Died at | On | Age
Male White Married Widow Divorced | Husband of
Female Colored Single Widower No. of children living | Wife
Father's Name | Mother's Name
Cause of Death { Primary | How long sick | Reported by
{ Immediate | Accident, Suicide, Homicide | Address

The copies of the envelopes below will give a clear idea of both the blanks and the way they are filled out:



Name of Child — Certificate of Birth

Mary Purnell Brown

Born at Town Great Mills County St Mary's MARYLAND

Date 189 8 Month May Day 1st ~~White~~ Colored ~~Male~~ Female Living ~~Still Born~~ Number of Child: ~~1st 2nd 3rd~~ 4th ~~5th 6th 7th 8th 9th~~

Father's Name in Full Elcanor Tarr Brown Age 36

Occupation Oysterman Birthplace St. Mary's Co

Mother's Maiden Name Bellona Purnell Age 34

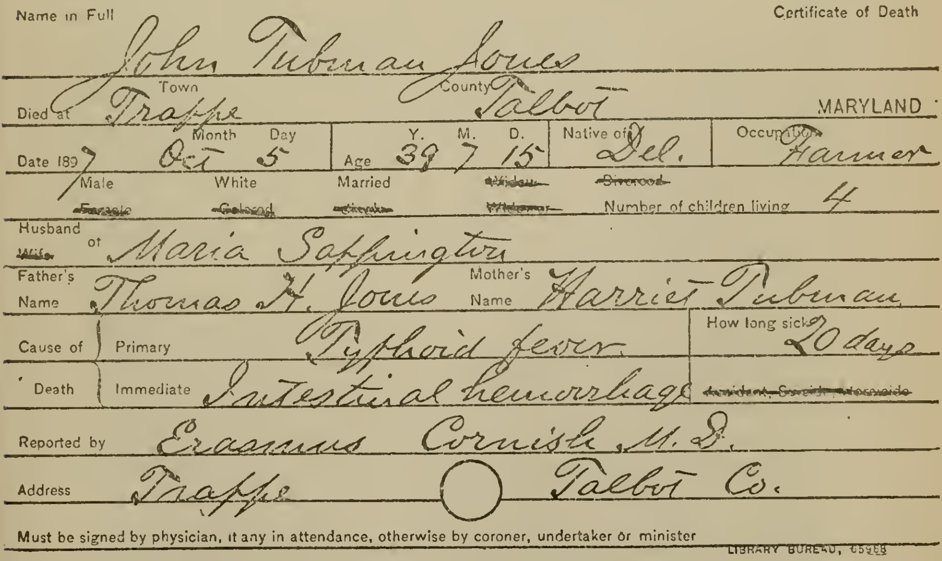
Occupation Housewife Birthplace Roanoke, Va

Reported by Pinkia Lydham ~~Physician~~ Midwife, ~~Parent~~

Address Millstone Landing St. Mary's Co.

If child is not named, send name as early as possible.

LIBRARY BUREAU, 63088



Name in Full — Certificate of Death

John Tubman Jones

Died at Town Trappe County Talbot MARYLAND

Date 1897 Month Oct Day 5 Age Y. 39 M. 7 D. 15 Native of Del. Occupation Farmer

Male ~~Female~~ White ~~Colored~~ Married ~~Single~~ ~~Widow~~ ~~Widower~~ ~~Divorced~~ Number of children living 4

Husband ~~Wife~~ of Maria Saffington

Father's Name Thomas H. Jones Mother's Name Harriet Tubman

Cause of Death Primary Typhoid fever How long sick 20 days

Immediate Intestinal hemorrhage ~~Accident Suicide Homicide~~

Reported by Erasmus Cornish, M. D.

Address Trappe Talbot Co.

Must be signed by physician, if any in attendance, otherwise by coroner, undertaker or minister

LIBRARY BUREAU, 65268

As many cards of each sort as may be needed are given to physicians, midwives, undertakers, ministers, coroners and other persons charged with duties under the Act.

At the office of the State Registrar, memoranda are made during the month of all deaths concerning which information is received from any source. When the monthly returns come in they are compared with this current list of deaths, and duplicates are eliminated, two lists are then made out and forwarded to each local registrar, one of all certificates of deaths occurring in his sanitary district and reaching us by other routes than through this office, and one of all deaths known to have occurred, but for which no certificates have been turned in. The local registrar is requested to obtain the missing information, and at the same time the State Registrar sends out tracers in pursuit of the legal certificates. A considerable number of incomplete certificates are placed in a special drawer labelled "Further Inquiry." When the needed information is obtained, as it usually is, by correspondence, the office record now completed, or the original certificate in the handwriting of the attending physician, as the case may be, is put into another drawer marked "Finished Inquiry." The cards containing the information on which the pursuit of the legal record was based are all preserved in a third drawer. Meanwhile, the properly returned certificates are tabulated on the mortality sheets, and then permanently filed alphabetically and by counties. All the cards in the "Finished Inquiry" drawer are kept until another monthly return is made, when, if no duplication of records is found, they are tabulated and filed. The "Further Inquiry" cards represent the certificates of death which have been most expensive to collect. It has several times happened that our tracers have brought us in four or five certificates of the same death at a cost of sixteen cents or more in postage. Nevertheless, this plan has a very good effect in impressing upon persons whose duty it is to certify, the fact that neglect of this duty is not likely to pass unnoticed.

The classes of citizens upon whom the bulk of responsibility for reports of births and deaths rests are physicians, undertakers, ministers and midwives. They have not all responded to the obligation alike. A few physicians have protested that the State has no right to exact these reports, but it has been pointed out to them that the State has a right to inquire fully into all the circumstances connected with any death, and that no information can lawfully be withheld except upon the ground of professional confidence. The opposition of this sort was very slight and soon put to rest. A good many physicians are merely negligent, while undertakers are inclined to indulge this carelessness by making out the certificates for the physicians. This results in much trouble for the undertaker, and often in extra work for the doctor. An undertaker's certificate is not a lawful certificate, except when a physician's certificate cannot be obtained, and we always pursue the inquiry until we get the doctor's own certificate, if that is possible. The undertakers, as a class, have taken up the new duties with more than cheerfulness, not a few of them having expressed gratification that such a law has been passed.

In order to show how important accurate registration appears to undertakers generally, the following from a leading trade journal, "Sunnyside," of New York, is reprinted here. The paragraph relates to the plans for census enumeration for 1900, but it shows the interest which undertakers feel in the whole subject:

"Outside of the States of Michigan, New York, New Jersey and New England, where the registration of deaths is perfect, the mortality statistics of the United States are so woefully incorrect and incomplete as to be practically worthless. The same mistake of attempting to collect mortality statistics by enumeration, which has made past censuses faulty, is to be repeated in 1900, unless vigorously objected to. Every board of health in the country, and every physician, undertaker and statistician is vitally interested in having correct systems of obtaining complete and correct statistics of every death occurring in the country."

Ministers have apparently no objection to making reports of death. The importance of the inquiry seems to have been at once clear to them. The number of certificates received from ministers is diminishing, but the effect of their vigilance upon the undertakers and physicians is very apparent. A clergyman's certificate is a final record only when the certificate of neither a physician nor an undertaker can be had. Most clergyman, when obliged to certify, have done so carefully, naming the delinquent doctors and undertakers, thus enabling us to complete our inquiries with but little delay.

In order to define clearly a lawful record of a death, for the instruction of physicians, ministers, and others whose duty it may be to certify, the following rulings have been published by the State Board of Health:

Rulings of the State Board of Health Concerning Certificates of Death.

I. The certificate of a legally qualified practitioner of medicine, written with ink by such physician's own hand, and containing the information required by Section 6 C of Chapter 312 of the Acts of 1898, as far as said information may be obtainable, shall be a complete and permanent record, subject only to such corrections and additions as may be offered with written evidence satisfactory to the State or local registrar; provided, that no alteration of the cause of death as returned by the physician shall be made except upon the authority of the State registrar, nor without proof that the first record was erroneous.

All corrections shall be entered on the registers and on the cards in red ink, in such a manner as not to conceal or obliterate the previous record. Any registrar may make further inquiries as to any matter alleged in a certificate, which may seem to him to be erroneous, and may require of any physician additional information as to the cause of death in any case where the statements returned do not explain or are not consistent with the fatal result.

II. An undertaker's certificate, written in ink by his own hand, setting forth the facts upon the best obtainable evidence, the name and address of the informant being written upon the card, and containing the fact that the deceased was not attended by any physician, nor seen by any coroner, shall be a complete and permanent record subject to correction as is provided in Rule I.

If any physician was in attendance during the last illness of any deceased person, or if any coroner viewed the body of such deceased person, the undertaker's certificate shall contain the name and address of such physician or coroner.

If any person shall purchase of any undertaker a coffin, casket or box for the burial of any deceased person, the undertaker shall make a record upon the lawful blank of all the facts obtained from the purchaser concerning the death, including the name and address of the attending physician and the name and address of the purchaser, and shall return the certificate to the local registrar; provided, that no undertaker shall be obliged to return a death which he knows to have been returned by a legally qualified physician.

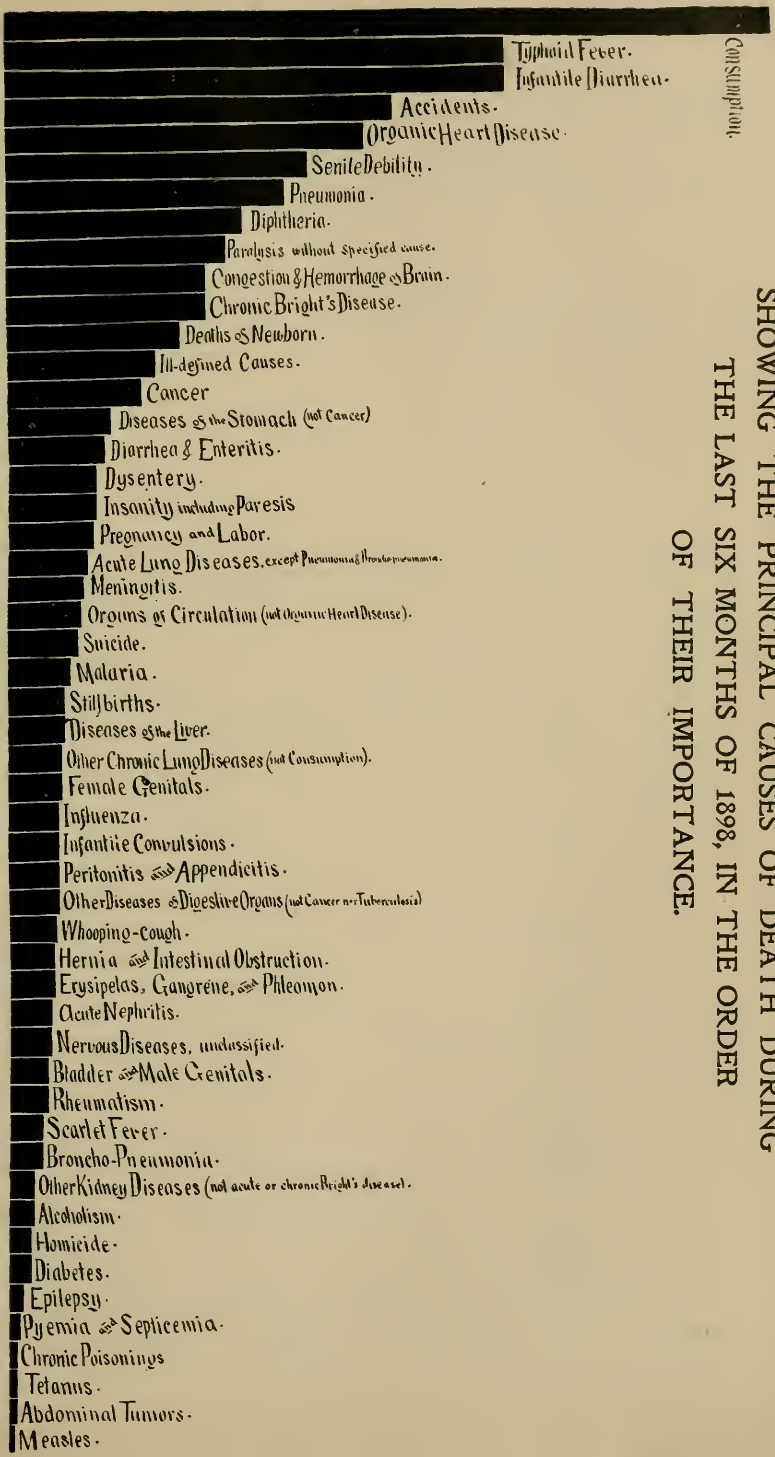
III. A clergyman's certificate, written in ink by his own hand, containing the information required by law, with the statement that no physician was in attendance upon the deceased, and that no undertaker was in charge of the body, shall be a complete and permanent record of death, subject to correction as provided in Rule I.

If any physician was in attendance during the last illness of the deceased, or if an undertaker prepared the body for burial, or is in charge of the body, the clergyman shall record the name and address of such physician or such undertaker, or of both physician and undertaker upon his certificate, and return the same to the local registrar within the first four days of the month next succeeding the date of death; provided, that no clergyman shall be required to make a return of a death which he knows to have been previously certified by a legally qualified physician or coroner or undertaker.

Passed Dec. 15, 1898.

Wm. H. Welch M. D., Pres. pro tem.
John S. Fulton, M. D., Secretary.

The returns of the first six months under any law could not be expected to give all the data which a registration system is expected to furnish. The returns between July 1st and December 31, 1898, will not enter at any time into any table. Their chief value is as documentary records. I shall only give here a single diagram, showing the chief causes of death in the order



SHOWING THE PRINCIPAL CAUSES OF DEATH DURING THE LAST SIX MONTHS OF 1898, IN THE ORDER OF THEIR IMPORTANCE.

of their importance. The diagram in the earlier portion of this book, giving the relative rank of certain preventable diseases, may be accepted as true. It differs only slightly from the showing made by much larger figures. Diagrams and curves will be freely used in future reports, because by that method the lessons of the cold figures are impressed at once and more vividly than by mere tables.

Mortality tables for city of Frederick and for Catonsville are found among the reports of local boards of health in this volume. Some of the most important tables from the vital statistics of Baltimore are reprinted in the following pages.

JOHN S. FULTON,
State Registrar of Vital Statistics.

VITAL STATISTICS OF THE CITY OF BALTIMORE FOR THE YEAR ENDING DECEMBER 31, 1898.

Estimated population, white			463,000
" " colored			78,000
Total			541,000
Marriages, 4,481. Rate per 1,000 of population		8.28	
Births (reported), colored males	3,787		
" " " females	3,440		
Total		7,227	
Births (reported), white males	787		
" " " females	779		
Total (reported)		1,566	
Total males	4,574		
" females	4,219		
Grand total		8,793	
Birth rate per 1,000, white population	15.60		
" " colored "	20.07		
" " whole "	16.25		
Still births		748	
Total mortality white males	4,109		
" " " females	3,809		
		7,918	
Total mortality colored males	1,216		
" " " females	1,251		
Total		2,467	
Total males	5,325		
" females	5,060		
		10,385	
Annual death rate per 1,000, white population			17.10
" " " " colored "			31.62
" " " " whole "			19.19

NUMBER OF DEATHS DUE TO EACH OF 24 CAUSES.

Measles	48	Pneumonia	889
Scarlet fever	46	Brohchitis	116
Diphtheria	362	Influenza	25
Croup	50	Bright's disease	454
Whooping-cough	64	Cancer	331
Typhoid fever	189	Disease of heart	498
Typho-malarial fever	12	Sun and heat stroke	54
Diarrhea	97	Pernicious anaemia	5
Dysentery	82	Appendicitis	34
Cholera infantum	386	Illuminating gas	9
Cholera morbus	12	Accidents	78
Consumption	1,061	Cerebro-spinal fever	3

TOTAL NUMBER OF DEATHS FROM ABNORMAL CONDITIONS CONNECTED WITH PARTURITION.

Puerperal fever	1
" convulsions	11
" peritonitis	10
" septicaemia	7
Child-birth	23
Abortion	1
Hemorrhage post-partum	1
Total	54

INFANT MORTALITY.

Total mortality under five years of age		3,939
Percentage to total mortality	37.92	
Total mortality from diarrheal diseases under five years		720
" " " " " all ages		970

DEATHS IN PUBLIC INSTITUTIONS.

Baltimore City Jail	5
Penitentiary	10
Hospitals and asylums	1,040
Total	1,055
Deaths reported by Coroners, including inquests	837
Tatal autopsies	89
Bodies received at City Morgue	337

TABLE I.

Showing the Number of Deaths Annually from Typhoid and Typho-Malarial Fevers Combined During a Period of Eleven Years, from 1888 to 1898, inclusive, Male and Female, White and Colored, in the City of Baltimore.

Year.	Estimated Population.	White.			Colored.			Total Males.	Total Females.	Total Deaths.
		Males.	Females.	Total.	Males.	Females.	Total.			
1888	395,899	88	90	178	80	14	94	168	104	272
1889	404,498	88	93	181	23	20	43	111	113	224
1890	413,671	135	109	244	26	31	57	161	140	301
1891	426,917	82	75	157	13	19	32	95	94	189
1892	440,163	90	102	192	19	15	34	109	117	226
1893	453,409	108	120	228	11	16	27	119	136	255
1894	466,655	103	104	207	23	27	50	126	131	257
1895	479,907	82	75	157	21	14	35	103	89	192
1896	493,147	93	81	174	16	14	30	109	95	204
1897	506,398	99	76	175	20	14	34	119	90	209
1898	541,000	96	62	158	19	24	43	115	86	201

TABLE II.

AGES.	January.	February.	March.	April.	May.	June.	July.	August.	September.	October.	November.	December.	Totals.
Under 1 year	148	173	226	162	166	315	458	315	273	170	126	192	2,724
Between 1 and 2 years	33	55	67	46	50	67	57	59	52	35	30	29	580
" 2 " 5 "	41	50	52	54	67	63	53	36	41	53	64	61	635
Total under 5 years	222	278	345	262	283	445	568	410	366	258	220	282	3,939
Between 5 and 10 years	27	28	31	28	29	32	34	22	34	31	41	26	363
" 10 " 15 "	6	9	19	22	12	21	23	16	20	12	8	17	185
" 15 " 20 "	23	31	36	26	24	16	26	24	21	19	22	26	294
" 20 " 30 "	56	62	95	60	64	75	80	69	77	55	81	79	853
" 30 " 40 "	65	56	75	73	71	68	69	64	70	52	68	78	809
" 40 " 50 "	59	70	85	49	80	64	69	58	58	61	78	78	809
" 50 " 60 "	70	81	94	91	85	65	65	50	67	68	76	105	917
" 60 " 70 "	77	8	78	78	67	76	90	77	64	78	75	113	881
" 70 " 80 "	53	71	84	82	62	70	69	61	65	45	74	98	834
" 80 " 90 "	34	25	49	33	27	33	36	28	25	28	34	44	396
" 90 " 100 "	4	9	4	5	3	2	5	1	3	7	6	8	57
" 100 " 110 "	.....	....	....	.....	2	.....	....	......	......	.....	......	.....	2
Unknown	......	41	4	......	......	......	.....	......	......	.....	.....	1	46
Totals	696	769	999	809	809	967	1,134	880	870	714	783	955	10,385

TABLE III.

1898. BIRTHS.	January.	February.	March.	April.	May.	June.	July.	August.	September.	October.	November.	December.	Totals.
White—Males	372	259	290	284	314	269	391	305	323	376	276	328	3,787
" Females	323	250	304	237	259	292	125	343	280	344	333	350	3,440
Total	695	509	594	521	573	561	516	648	603	720	609	678	7,227
Colored—Males	61	73	45	62	44	79	104	81	53	58	64	63	787
" Females	60	48	61	55	60	71	102	74	69	66	62	51	779
Total	121	121	106	117	104	150	206	155	122	124	126	114	1,566
Total births reported	816	630	700	638	677	711	722	803	725	844	735	792	8,793

Report of the Chemist Upon Water Analyses.

BALTIMORE, January 10, 1899.

DR. JOHN S. FULTON,
Secretary State Board of Health:

DEAR SIR—Enclosed please find tabulated list of analyses made during the year 1898. These have been put under the heads of the counties and the number of samples given. In the case where the analyses were for private parties, the names are not noted, but only the number of analyses and the result. Where the results are of public interest, the names are given.

This work should be repeated during the spring and summer months, and steps taken to protect the public from ignorantly using these contaminated waters.

Yours, very truly,

W. B. D. PENNIMAN, *Analyst.*

Allegany County.

Six private supplies—4 bad, 2 good.

Lonaconing Water Co., (public supply)...........	Good.

Anne Arundel County.

One private supply	Bad.
Patuxent Driving and Running Association.......	Good.
Maryland House of Correction..................	Good.

Baltimore County.

197 private supplies—147 bad, 50 good.

Minnehaha Spring, Emory Grove..	Fair.
Emory Grove, (pump near preachers' tent).........	Good.
Pump rear of Thompson avenue, Emory Grove....	Bad.
Pump on Thompson avenue, Emory Grove........	Good.
Artesian well, Emory Grove	Good.
Second examination of Minnehaha Spring.........	Good.

Fair Grounds and Pleasure Resorts.

Two samples at Timonium......................	Bad.
Gwynn Oak Park, (well)........	Bad.
“ “ (spring).....................	Bad.

Colloseum, Hall Springs	Bad.
Third sample Timonium	Bad.
Dug well Gentlemen's Driving Park	Bad.
Artesian well " " "	Good.
Spring at Lakeside Park	Bad.
Crystal spring, Lakeside Park	Bad.
Flood's Park	Good.
Riverside Athletic Park, (Acton's)	Bad.
Kelley's Park	Good.
Werner's Park	Bad.
Klein's Resort	Bad.
Meeter's Park	Bad.
Kirby's Beach	Bad.
Geo. Easter's Grove	Good.
Club, (Wm. F. Stone, owner)	Good.

Well nearest water tower, Sudbrook Park	Good.
Well in constant use near railroad, Sudbrook Park	Good.
Old well at pump house, Sudbrook Park	Bad.
(Two confirmatory analyses were made of last two samples.)	
Penwood Park, Penna. Steel Co., (two supplies)	Bad.
Maryland Hospital for Insane, No. 1	Good.

Caroline County.

Six private supplies—4 bad, 2 good.

Carroll County.

Nine private supplies—7 bad, 2 good.

Taneytown water supply, (two analyses)	Good.
New Windsor water supply, (two analyses)	Bad.

Cecil County.

Eight private supplies—all bad.

Silver Cross Home for Epileptics	Bad.
Port Deposit Water Co.	Good.
Town pump "Rock Run," Port Deposit	Bad.
Perryville Water Co.	Fair.

Charles County.

Two private supplies—both bad.

Frederick County.

Three private supplies—2 bad, 1 good.

Harford County.

Three private supplies—2 bad, 1 good.

Howard County.

16 private supplies—12 bad, 4 good.

Kent County.

Five private supplies—3 bad, 2 good.

Chestertown public supply	Good.
Three examinations of Chestertown supply	Good.
Howard pump, Chestertown	Very bad.

Montgomery County.

Four private supplies—all bad.

Prince George's County.

One private supply—bad.

Spring at House of Reformation, Cheltenham	Good.
Well at main building, Cheltenham	Bad.
Well at family building No. 3, Cheltenham	Bad.
Well " " No. 2, "	Bad.
Well in jail yard at Marlboro	Bad.

Queen Anne's County.

Seven private supplies—6 bad, 1 good.

Centreville artesian well	Good.
Stream quarter mile above Centreville	Bad.
Centreville Reservoir	Bad.

Somerset County.

Two private supplies—both bad.

Talbot County.

One private supply—bad.

Washington County.

One private supply—good.

Washington Agricultural Fair Grounds	Good.

Wicomico County.

Two private supplies—1 bad, 1 good.

Worcester County.

Pocomoke City artesian well (experimental,) 2 examinations	Bad.

Report of Inspector of the Lake Roland and Gunpowder Water Sheds.

Baltimore, January 2, 1899.

Dr. John S. Fulton,
Secretary State Board of Health.

Dear Sir: I respectfully submit the following annual report of work done on the Gunpowder and Lake Roland water sheds of the city of Baltimore during the year 1898.

The Gunpowder, with its twenty-five branches, their divisions and sub-divisions, and the Lake Roland supply, with all of its tributaries, have been personally gone over as a whole three times, together with repeated inspections of those sections in which drainage to and pollution of water has been greatest.

During the year the inspections made have numbered 635; reports presented have been 153, and notices served by the Secretary of the State Board of Health 20. There has been an abatement of 41 nuisances on the water sheds. Of verbal notices there has been kept no record. Suits entered by State Board of Health, 1; suits pending, 3. There have been about 48 photographs of nuisances taken, together with samples of water for both bacteriological and chemical analysis, wherever there has seemed to be any possible source of pollution. Forty eight (48) samples of deep water from the principal lakes, dams and branches, with the same amount of surface water, have been taken to test purity.

Inspections	635
Reports presented	153
Notices served by the State Board of Health	20
Abatements of nuisances on water sheds	41
Suits entered by State Board of Health	1
Suits pending	3
Photographs taken	48
Samples of surface and deep water from principal dams, lakes and branches	48

Respectfully submitted,

George H. Everhardt, M. D.

CLERICAL REPORT.

Ordinary correspondence, (letters)	988
Vital statistics inquiries	505
Mimeograph letters, notifications, etc.	405
Reports of chemical examinations	363
Circulars, announcements, programmes, etc	3,100
Total mail packages January 1st to December 31, 1898	5,361

M. L. Rullman, *Clerk.*

State Work for the Restriction and Prevention of Diseases.

An Address at the Quarter-Centennial Celebration of the Michigan State Board of Health, Detroit, August 10, 1898.

BY JOHN S. FULTON, M. D, SECRETARY OF THE STATE BOARD OF HEALTH OF MARYLAND.

All of you must know the mingled feelings which accompany one to a first meeting with some distinguished person whom one has long desired to know. Ever since I was asked by the Michigan State Board of Health to take part in these exercises, I have been suffering that pleasant perturbation. At the first moment one's spirit leaps before him to speak the homage that he owes, at the next shrinks behind him less the occasion be too great. And few occasions can be greater than those upon which men meet, as we do now, to review the successful campaign of a great State against death, disease and pain among her citizens.

The growth of the science of hygiene has so far proceeded by similar steps, in the same order, which characterizes all social developments, and one may reasonably believe that its future history will follow the general formula of the older and more advanced evolutions. Necessarily progress is not in a right line nor with a straight front. Humanity, like the groping phagocyte, thrusts out apparently aimless pseudopodia, touching often nothing, sometimes a little thing, and rarely some great matter; but never failing to recognize, to grasp and to drag the unthinking mass toward that which it needs.

Often enough great movements, though guided by definite purpose, reach results quite different from and of greater value than those sought. Such was the memorable Winter's Journey of John Howard, who desiring primarily that the jailor of Bedfordshire might be paid a salary instead of fees, begot an impulse that gathered strength from day to day, until British law abolished jail-fees, and initiated the sanitary reform of prisons and asylums. Then the voice of humane compassion began to prevail in British politics, and against even imperial will sounded the doom of colonial oppression, slave-trading and slave-holding, religious persecution, and a barbarious penal code. Then sanitary legislation upon grounds of reason and humanity became possible.

In times so ripening Jenner brought forth his imperishable thought, and in the history of vaccination for the next fifty years the future of sanitary legislation was broadly outlined for two centuries. Hitherto human health had been of political concern only so far as military and naval operations depended for success upon the effectiveness of human tools. The more or less rational conjectures of the medical teachers of that day offered no firm basis of fact upon which might be built legislation to protect the peaceful, home-keeping population. Here at length was a decisive conquest over a unit of disease, and toward the application, in express terms of law, of such a victory to the safety of the whole people fear and reason alike impelled. In respect of vaccination against small-pox, the principle is affirmed beyond controversy that the individual may be obliged for the sake of the common welfare; to choose between two alternatives; either to acquire immunity at the cost of an infection produced by design, or else give up his personal liberty for a period after each exposure to small-pox. This is the farthest reaching precedent which has yet appeared in the history of State Medicine. Since civilized nations began to incorporate this scientific procedure into law, it has everywhere by all men been believed that the prevention of small-pox is of general no less than of local concern. If it be a right of function of law to prevent small-pox, then law need only wait for available means to prevent other diseases. One article of the catholic creed of sanitation is that health of the people is the charge of the State.

The force of the older principle, that the health of the citizens is the care of the city, is not in this declaration diminished but augmented, and with the growth of local sanitary government, the functions of central sanitary administration must broaden and deepen. A republican principle so well settled as to need no proclamation is the right to local self-government, and wherever this right is most loudly asserted in respect of sanitary matters, there will usually coincide the greatest need with the least exercise of self-government. Since the welfare of the State can only be the resultant of the welfare of its component units, common sense will insist that the local administration of sanitary law be referred to some established norm. Such has been the history of all law, and nothing different can be expected of sanitary law. It is doubtful if there is yet anywhere a board of health which nearly approaches perfection, or if there will be such an example until the sanitary government of States shall be co-ordinated by national sanitary law, incarnated in a National Bureau of Health.

Neither in science nor in politics do we find all things ready for the organization and equipment of such a board of health as could make serviceable all the ripe fruits of modern medicine. Nowhere has sanitary legislation grown up symmetrically. Leg islatures have put into law, without reference to previously constituted authority, the sanitary conceits of all sorts of reformers, moral, religious, philanthropic, educational, commercial, industrial. The results of administration, though in many instances disappointing, have been on the whole so profitable that one must in spite of its redundancy rejoice in such extraordinary growth, as promising that exact knowledge concerning the causes and prevention of disease will not advance much faster than law will follow.

As a preliminary step toward the plane upon which the sanitary affairs of a State can be best administered, one would suggest the appointment of a commission to revise and re-embody in a workable and understandable code those laws which in any State have been found useful in the protection of human health. Such a commission would engage first-rate legal talent, experts in the administration of sanitary law, in the statistics, and in the chemistry and biology of hygiene, engineers having special training in sanitary works, men of wide experience and ripe judgment in the care of the dependent and delinquent classes, and in the education of children. Happy the State which can associate in one undertaking seven or nine citizens possessing such qualifications. I doubt if in any State a committee of recognized authority upon these subjects could be assembled from the ranks of one political party. Such men would in their appointed work constantly confront questions of state-craft, and the more clearly they recognized that public health is an important object of practical politics, the better would they build against the vicissitudes of party, and the more scrupulously would they preserve the treasures new and old accumulated in the long history of hygiene. Our commission would have much in hand besides the organization of a State Board of Health, but they would have no more important work, nor any that we can consider on the present occasion.

Looking at the numerous boards of health, State and local, one must be impressed that the modern idea of a central sanitary authority is immeasurably better than the older conception of a local sanitary authority, in that it is designed to be, and usually is exempt from the depredations of party traffic. It is a propitious sign that in these alleged decadent days the science of State medicine should have this immunity, for upon this vital quality depends the strength of the whole structure. The weakness of local boards in this regard sufficiently emphasizes without further argument the need and value of a State Board of Health.

The first need of a State Board of Health is a code of sanitary laws, covering all workable ground without gaps, and capable of being amplified without overlapping. Such a code will provide before all things else, the information which alone can give to the efforts of the board definite direction and measurable effect. It is not necessary here to speak at length of the value of complete systematic registration of vital statistics. The general economic worth of such registration was recognized long before its special utility was discovered by sanitarians. Indeed, modern State medicine may be said to be the unpremeditated, as it is by far the richest result of the General Registration Act of 1836; and the foundations of sanitary legislation might not yet have been securely laid if the administration of that Act had been committed to any other Englishman than the consummate master of statistical methods, Edwin Chadwick. The function of vital statistics, which is of the highest use to the sanitarian, is to furnish true, full and fresh information concerning the causes of death. As to the cause of death only a physician can testify with authority, and he will speak most authoritatively if his record be made at the time and place of death. There is but one way to insure immediate registration, and that is to forbid any disposition of a dead body until a proper record is returned. The burial permit is the key to prompt registration, and without it no vital statistics law can be economically operated.

An important detail, omitted from American and English practice, is the verification of deaths. The physician too often accepts the statement of an undertaker or friend that an expected death has occurred, and certifies accordingly. He makes no visit to substantiate the report, nor inquiries through how many individuals the rumor has come to him, or whether his informant ever saw the decedent alive or dead. This point has perhaps no bearing upon the value of statistics, but in other relations it will be found rather a serious omission.

Since a vital statistics law returns its greatest profit to the State in information as to causes of death, it is desirable that so far as possible all the details of its administration should be in the hands of medical officers. That the mortality returns are often of great value and completeness when compiled by non-medical men does not argue against this general principle. Rather does it show that intelligent laymen may acquire much medical knowledge in the practice of mortality registration, and suggests that if such men had been trained first in medicine they would have been yet better statisticians.

A chief need of registration officers has always been a good classification of deaths for statistical purposes. The science of pathology has now so far advanced that a thoroughly good classification, capable of universal use, is possible, but it is not likely that any State Board of Health will set about making one. If statistics are to be useful in the broadest way, State Boards of

Health must come to a general agreement among themselves on this point of classification. At present the need of uniformity does not seem to be very widely felt.

What a curious reflection it is that we have so long and carefully kept our irretrievable account against relentless Death, while against Disease, the mitigable agent of Death, we make only occasional entries. The idea of sickness statistics has never been forcibly impressed upon any modern legislature, though it has long been clear to sanitarians that statistics of sickness are of more immediate practical utility than returns of death. The most convincing political argument developed by Edwin Chadwick in his report of 1838, was that the cost of sickness was the principal item in the burdensome poor rates. He did not argue concerning the cost of death. It was then, as it is now, cheaper to bury a dead man than to support a sick one. The average assemblyman, so far from being convinced, smiles at the enthusiasm of the sanitarian who attempts to impress upon him the economic loss involved in disabling sickness; but the same assemblyman when injured through the neglect of a transportation company is sure to assess his disability, whether temporary or permanent, at a good round sum, and the average juror usually agrees with him. If from the value of a hand or an eye so determined, one should try to calculate the cost of total permanent disability from preventable disease, court and jury would spurn the reasoning. The blindness of municipal and State legislatures to these considerations illustrates how easily a tax may be concealed if it be indirect. In the army and navy where the cost of sickness falls directly on the organization, statistics of sickness are always available.

Happily it has been shown in one State that statistics of sickness can be systematically gathered without the aid of the law. It is the unique distinction of the Michigan State Board of Health to possess continuous records of prevalent sickness for more than twenty years, and to have established the surpassing value of such statistics. For the present such a possession must, I fear, remain the envy of other State Boards of Health. One finds it hard to believe that Michigan medical men excel the physicians of other States in mental stature, and one must attribute the sustained success of this system not more to the intelligence and fidelity of the individual contributors, than to the singular executive skill and personal influence which has made Lansing the focus of all these impulses. If I were a Michigan physician, I should count it somewhat of a distinction to be a local contributor to these reports, for the combined observations of your one hundred or so observers are more exact in their indications than those of a thousand physicians returning certificates of death.

Not long ago I had occasion to make from the experience of thirteen boards of health a composite curve representing the annual diphtheria mortality by months. One hundred and twenty-five thousand death certificates entered into the composite, and of the thirteen separate curves none resembled the composite so nearly as a Michigan curve from the sickness reports. I am inclined to believe that the normal seasonal rise and fall of diphtheria would be as well shown from the weekly sickness reports to the Michigan Board of Health as from the combined mortality returns of the country.

Michigan experience affirms it to be as true in practice as it is in theory, that one hundred representative physicians in active practice will each see whatever sickness is present in each locality, and will be able to report year in and year out a fixed proportion of all the disease in the State. Unlike mortality statistics, statistics of sickness do not require to be complete. Their use is that of a sample for analysis. They furnish data for reasoning, not arithmetical results. It is difficult for a man who is sensible of his own fallibility to realize that his observations with those of a hundred other equally fallible men will yield results of unvarying accuracy, but it is so. "If," says Doctor Baker, "the weekly reports of a sufficient number of competent observers, well distributed over a given territory, produce results which are quite consistent from week to week, from month to month, and from year to year, such statistics must be accepted under the law of probabilities as sound data."

A recent step in preventive medicine promises to bring reports of sickness within easier reach of some of us. The establishment of public bacteriological laboratories, rendering free assistance to physicians in the diagnosis of infectious diseases, creates a new bond of mutual interest between sanitarians and practising physicians. Such a bond has hitherto been lacking, and public health practitioners should let no part of so important an advantage slip from them. In Maryland we hope to keep the physicians reminded of their obligations to the State by asking at the beginning of every application for bacteriological diagnosis, "Are you up to date with your reports of births, deaths and infectious diseases?"

The short history of State and municipal biological laboratories has abundantly justified their existence. They have produced a copious literature which is of current use among clinicians and teachers, and have developed an army of workers who exert a strong influence on the medical thought of the day. Aid to private citizens and to medical men, valuable though it is, makes but one item to the credit of a public bacteriological laboratory. The larger profits are in the device and control of preventive measures, and in the habitual use of timely information, of accumulated records, of repeated observation, and of opportunities for experimental work. The criticism which has fallen upon some of the laboratories, if it be just, convicts them of nothing more serious than exuberant activity. No one complains that they have done less than was expected of them.

Substantial advance in the prevention of disease can only be made upon practical application of the truths of pathology. The activity and the productiveness of this branch of medical science in the last twenty years exceeds anything that the scientific world has ever witnessed, and the field promises yet richer fruit. Out of the harvest already gathered much has been profitably applied to prevention, and more is ready for practical application as soon as political common sense shall apprehend and approve it. We dare not hope that any State or nation will proportion its steps to the strides of this science, but it is a hopeful sign for us all that the American people, who waste little courtesy upon things not obviously practical, have recognized the rich promise of biological research and have engaged it in the public service.

State and local boards of health must both be eternally vigilant of all common carriers of infection, and the State Board of Health, as having the wider horizon, should be entrusted with the primary and paramount authority. The chief common carrier of disease is water. In these days when the private well is rapidly being displaced by the pipes of the company, the power of the water supply for good or evil is greatly augmented. The territorial rights of local boards cannot be made broad enough to secure adequate supervision and control of such large sources as are placed in tribute. Any community may easily obtain what seems to be a clear title to the use of a stream or lake, but the conflicting natural rights of other communities and of individuals are soon found not to have been alienated even by Act of Assembly. Each and every party to such a contention stands upon his rights, though none can obtain his rights until all are obliged by some commonly respected authority to do their several duties. The example of those States which have vested the control of inland waters in their boards of health deserves to be generally followed. Commercial companies even when they have used right judgment and skill in their first provisions, are less scrupulous about supplementary sources when extending their service, and are apt, after ever so good a start, to become indifferent to most considerations aside from profit. Municipal water boards are most heedful of the voters and taxpayers, who either drink what is delivered without grumbling, or else demand that the cost of improvements shall fall on land owners outside of the city. A State Board of

Health, having in charge all the possibly conflicting interests, will determine whether the desired sources may properly be laid under tribute; whether the water is of good quality, or may be purified and kept pure; whether its volume is sufficient; will examine the plans for collection, storage, purification and distribution; will secure to the users of the water adequate rights of inspection and nuisance removal; and will see that no natural or acquired rights, either within or without the city, are exercised beyond their reasonable and proper use.

Closely related to water supply and equally needing State supervision is the disposal of waste. Sanitary progress should, of course, be symmetrical, but it is the peculiar habit of communities to consider but one problem at a time, and, having taken one step, to be content therewith until growing disappointment or imminent disaster drives them to another. Where hygienic education has proceeded as it should, good methods of disposal of waste will have been understood and practiced long before the need of a general water supply is felt. That all communities, even the smallest, shall be instructed in the care of the soil should be an especial concern of every State Board of Health. The introduction of a common water supply, however excellent, into an unsewered, unscavenged town is not likely to be an unalloyed blessing. A filthy soil will be all the filthier after the so-called modern conveniences begin to flood the town with diluted wastes. Private wells will become degraded to disgusting uses, and the area which before had a maladorous eruption on its surface, will become honeycombed with putrefaction vats. Good water supply and sewage disposal are twin necessities. Neither may properly be considered apart from the other. Judicious intervention in such local affairs not only saves local authorities from errors against their own citienzs, but also prevents injury to other communities. The same scrutiny which a well ordered town gives to the sanitary proposals of individuals, should be exercised by a State Board of Health over the sanitary works of cities and corporations. No community, large or small, should be permitted to use any natural stream or lake, or to impound any water, or to lay any sewer, or acquire a right to deposit night soil or garbage anywhere without its own limits, until full plans and details are submitted to and approved by some board of general authority, who shall also examine all the rights, titles, interests and objections of all parties affected, or likely to be affected by the construction or operation of such works.

The manufacture and production of food and drink, and the health of domestic animals, as having important influence upon human health and comfort, should be regulated by a law of general application throughout the State.

All the matters which we have so far considered relate to general sanitation, the main defensive works against disease. They are certainly a very important part of the work of a State Board of Health, but a central board which did not make any aggressive efforts against specific diseases would fall far short of its legitimate purpose. The local board must in every instance first engage a local outbreak of communicable disease, but the State Board of Health can always give counsel and aid, and should possess resources of its own equal to any emergency that may arise. Supposing the local officer to be equipped and competent to manage a large outbreak, the State board can make his operations proceed more smoothly by instructing the people concerning the disease then present. The timely distribution of well prepared circular literature, teaching people only what they need to know on a present occasion, has long been practiced by the Michigan Board of Health, and must have saved many a local health officer from the stupid or sulky obstruction, which so often hampers his efforts.

But local officers are not always equal to all probable exigencies. Subject to frequent change at the will of party or faction, local boards cannot maintain constant efficiency. In the presence of grave infectious disease the State Board of Health should always exercise its powers to the precise extent necessary to compensate the deficiencies of the local board. In any crisis beyond the control of local authorities, the State board should seize the situation as tactfully as they can, but peremptorily if they must. An epidemic is more than a local calamity. It hazards the safety of the whole commonwealth. It is a far more dangerous thing than an armed and riotous mob, and must be dealt with as summarily.

Wherever any grave infection reaches the proportions of an epidemic, the State Board of Health should co operate on the spot with even the most competent local board, and each should clearly understand and discharge its own functions. To the local board properly belongs the actual domiciliary work in the front. The responsibility behind the fighting line should be borne by the State board. Particularly should the State board secure to the local board the credit and confidence which the community owes. In no other way can the necessary activities go on without expensive disturbance of the ordinary life of the place. As to all that threatens public health outside the local sanitary jurisdiction, the State board should exercise its paramount authority. These matters will relate chiefly to the disposal of dead bodies, and to the movements of persons and things believed or suspected to be capable of carrying infection. Immediate circumstantial information should be furnished to other local boards concerning every suspicious person or thing that may be moving out of the infected area.

The running history of every epidemic and of every outbreak, large or small, should be preserved. The management of infectious disease is the clinical work of State medicine, and without a case book one's experience can never be large or comprehensive. The practice of the Michigan Board of Health, opening as it does an account with every outbreak, and continuing item by item till the incident is closed, has amassed a collection of histories that any of us may honorably covet.

The public, including the doctors, have not yet learned what an epidemic is, and local health boards are usually loth to use the term within their sanitary jurisdictions. This reluctance, doubtless, grows more out of the sensitiveness of large business communities, than out of the professional sensitiveness of local officers. In current use, epidemic means simply the prevalence of unusual or dangerous disease. Fifty cases of rabies would in Detroit seem an epidemic, and your newspapers would reverberate with the horror; but who ever heard of an epidemic of tuberculosis anywhere? If the 100 deaths from typhoid fever which occur here in a year should all happen in three months, you would refer to the 1,500 or so cases as an outbreak. If they all should fall in a month, you would have to admit the existence of an epidemic. The people need to know that in every city or State whose typhoid rate is year after year above two per thousand, typhoid fever is annually epidemic. Typhoid fever is as much the sanitary shame of America as yellow fever is the opprobium of the West Indies, or leprosy of Hawaii. I suspect we shall remove both these latter motes from our neighbor's eyes before we get the beam out of our own.

We have been hearing much recently about the health of our soldiers at the military camps in our own country and in Cuba. At the home camps we have troops relatively immune to typhoid fever; at the front troops generally susceptible to yellow fever. Sanitary discipline is perhaps not better at the front than at home. Against typhoid fever we possess preventive measures of positive and proven effectiveness; against yellow fever our methods are yet on trial. The sanitary history of the war now happily closing will furnish us some valuable lessons. If as we may anticipate, the prevalence and the fatality of yellow fever among the troops in Cuba should not greatly exceed that of typhoid at Tampa, it should teach us that our own familiar typhoid fever is to us a more formidable enemy than yellow fever can ever be. I doubt, however, if sanitarians will be able by one or a hundred modern instances to impress this lesson deeply upon the popular mind. Rather will the average citizen hustle after the nimble sixpence, with the mental comment that yellow fever in Cuba and typhoid fever in the next block are equally paltry public questions.

But the barriers of popular misapprehension are not immovable, and it is the very highest function of a State Board of Health to remove them. This is a labor demanding infinite patience and tact, and those of us who do not possess these great virtues often wish that we might try upon our refractory pupils the educational effect of severely punitive laws. It is fortunate that legislatures will not permit us to employ these strenuous methods. The education of the people must proceed slowly, but it may be pushed forward steadily and somewhat systematically. Many State boards publish sanitary bulletins, which are of some educational value, but it is a fair criticism upon all such publications that they do not meet nor do they create any considerable popular interest. Those who read them must possess a tolerably advanced education in hygiene.

In our medical schools the teaching of hygiene is feeble and perfunctory, having little or no weight in examination for the degree, so that even the medical men in this country have, as a class, little influence or authority upon the subject. In England special courses leading to the degree of Doctor of Sanitary Science have been created, and hygiene has proper rank among the subjects of final examination for the degrees in medicine and surgery. To bring about a similar advance in American medical education is a worthy enterprise for State Boards of Health.

Hygiene as taught in the public schools is concerned exclusively with personal health, and propagates chiefly the somewhat contracted views of certain moral reformers. It is to be hoped that State Boards of Health will some day create a demand for far better instruction of youth in the principles of hygiene than boards of education now provide. The Michigan Board of Health has recently been successfully laboring to this end, both at home and abroad. The reception accorded to the paper of Professor Delos Fall at the National Educational Association would seem to promise that other States will not allow Michigan a very long start in legislation on this subject. The Michigan Teachers' Sanitary Bulletin has also lately appeared, and as the way for it was well prepared in the Act of 1895 concerning instruction in hygiene in the public schools, the publication has, no doubt, entered upon a career of growing influence.

The sanitary convention or association is of high influence in this work. The conference of health officers is of primarily technical interest, and its effect on public sentiment cannot be direct or widespread.

The Sanitary Convention, as managed in Michigan, has the same strong points that we have noted in their distribution of popular literature on infectious disease. They are only held in response to local invitation, some especial need of such a convention being always then and there present. They are not emergency or calamity meetings; still less are they bon-bon parties given by ambitious towns. They are serious public assemblies, met to discuss some timely topic. The locality is always required to contribute its full share to the program, and to arouse in advance as much popular interest as possible. The influence of each of these conventions upon the community in which it is held must be lasting, and ought, it seems to me, to be lively enough to bring about the formation of local sanitary associations.

Finally, it must be the study of every State Board of Health to establish mutually-helpful relations with all forces operating toward the safety and health of the people, and they are no such influences, individual or corporate, unable to make a fair exchange of benefits. As its relations with local boards will be most immediate and constant, I may be pardoned another word on that subject. The central sanitary authority must from the beginning assume some reasonable standard of efficiency for each locality, and must advance that standard from year to year. It may not at once demand that everywhere preventable disease shall be forthwith prevented; though that is the ultimate test of success. But it must require that all the means available in each locality shall be used to that end, and it must continually point out and supply means. Wherever local authorities are progressive, though in practice ever so little in the lead of popular will, there cordial approval can be given without condescension, and co-operation without officiousness. No local board will be so excellent that it may be neglected, and if any desires to be neglected, it must be either because the State Board of Health is inclined to unwisely act or dictate in local affairs, or because the local authorities wish to give the people the shadow instead of the substance of sanitary government. In no department of government is the appearance more easily substituted for the fact, and it must be remembered that sanitary misrule is most injurious at those levels of society where the power of individual self-defense is feeblest. It is for this reason mainly that I believe in the right use of power of intervention by a central board of health. The times are not yet ripe for the better remedy which will come when courts and legislatures shall affirm the legal accountability of local authorities for neglect or malpractice. That justice will in the future be accorded to the injured citizen, but meantime there is no check upon municipal sanitary crime unless there be appeal to some central sanitary authority clothed with power of intervention.

It will be observed that State Boards of Health, as I have described them, are executive as well as advisory. In this respect they would seem to differ from the excellent example whose successful career we are here to celebrate. The difference is, however, more apparent than real. Any one who reads the reports and other publications of the State Board of Health of Michigan, (and I advise every one who does not read them to mend his ways,) will see that however much it may desire to be and to remain a purely advisory board, it has done much clinical as well as consultation and laboratory work, and has done it all extremely well. When popular education and sanitary law have so far advanced that every community will appreciate and provide for all its own sanitary needs, and will leave cleanly with equal respect both to itself and its neighbors, then all State Boards of Health will be busy enough in advisory work; and our chemists, engineers, biologists, and statisticians will be sufficiently occupied in keeping us prepared for a higher class of consultations. We all hope to arrive at that consummation sooner or later, and all of us admit with hearty congratulations that about the speediest and most enduring of our pacemakers is here in Michigan.

APPENDIX.

AN ABSTRACT OF THE PROCEEDINGS

OF THE

MARYLAND PUBLIC HEALTH ASSOCIATION

AT THE

SECOND ANNUAL MEETING.

BALTIMORE, *May 11 and 12, 1898.*

The meeting was called to order at 10.30 A M. by the President, Dr. Wm. H. Welch.

Referring to the influence of the association upon public health legislation, Dr. Welch mentioned the new vital statistics law and the infectious disease act, enabling the State Board of Health to maintain a biological laboratory. Dr. Welch further said:

If we had accomplished nothing more than one or the other of these things, which promise so much for the future, the organization would certainly have done a very great work. Of course, the great part which our public health association is to take in making preventive medicine effective relates to public education in sanitary matters. The factors which secure good results in preventive medicine are, in the first place, the establishment of a sound scientific basis for such medicine; in the second place, good laws based upon this knowledge; thirdly, the securing of well trained officers to administer these laws; and lastly, the education of the public, upon whom we must rely for support of such legislation, and for the active administration of the laws.

It is particularly in the last-named direction that the work of this association lies. One thing we need in this country, and which I think will come, is such training of the public in matters concerning public health and preventive medicine as they have in England. Many of you know that the English public health officers are specially trained. The current idea that physicians in general possess this knowledge is erroneous. The training of medical men does not of necessity carry with it any special training in hygiene. That is one of the advantages to come, for it is already advocated in our journals, and steps have been taken in Philadelphia, at the University of Pennsylvania, to establish a course of training for those who wish to make a career as public health officers. That movement will, I think, mark a very distinct era in the improvement of public health in this country.

Of course organization is necessary to secure these results. It should begin with a national bureau and end with organizations in the small towns and villages. We need, and should have, a properly organized bureau of public health in connection with one of the departments of our government at Washington. There are reasons why such a bureau has not been established before, but it is something we must all appreciate the necessity of. Where these various factors work together and are effective, the practical results of preventive medicine have been made so manifest that he who runs may read. There is no question as to our ability now to express in figures, that admit of no denial, the practical, beneficial results that come from public hygiene, and when these points are recognized it becomes perfectly clear that sanitary matters belong to the highest order of statesmanship and should occupy a prominent place in our politics.

It has been pointed out in a very forcible address by Dr. Russell, the celebrated health officer of Glasgow, that sanitation is one of the most important factors in relieving social discontent. He has pointed out that its effects are more promising than those of socialism. This is a very interesting thought.

I happen to have been reading recently something of the work of that great public educator, the late Mr. Northrop, of Connecticut, as to the good accomplished by village improvement societies. It has occurred to me that it might be worth while to call the attention of this association at some future meeting to work along that line. I will not enter into details concerning it now.

In all of this work, as I had occasion to say in our first meeting, women are very serviceable agents. They take a very great interest in many of the details of this work, and experience has shown that they are most successful in securing good results.

The secretary then presented the resignations of Drs. T. Chew Worthington and Harry Algire, both of which were accepted.

The following candidates for membership were then duly elected: Mrs. E. A. Andrews, Rev. L. B. Baldwin, Commandant H. H. Balch, Miss Mary Wilcox Browne, Miss E. M. Carroll, Mr. C. DeLacey Evans, Mrs. C. DeLacey Evans, Miss Alice Gilman Dr. F. F. Greenwell, Dr. E. M. Hardcastle, Dr. John C. Hemmeter, Mrs. Alcaeus Hooper, Dr. Eugene Jones, Dr. C. Hampson Jones, Prof. G. W. Joy, Dr. Howard A. Kelly, Miss Elizabeth P. King, Mrs. Daniel Miller, Dr. Z. R. Morgan, Miss Kate M. McLean, Mrs. M. N. Perry, Mrs. E. A. Robinson, Dr. L. M. Selling, Mr. DeCourcy Thom, Mrs. J. Appleton Willson.

The president announced the following committee on nominations: Drs. Stokes, Hollingsworth, Bratton, Todd, Stabler, Pollack and Clements.

Dr. Joseph E. Gichner and Dr. Melvin S. Rosenthal, of Baltimore, then read papers entitled "The Sweat Shop in Its Relation to Public Health."

Dr. Gichner said that we should look at the matter from all sides. The definition of sweat shop varies; some so called sweat shops are really not sweat shops, and *vice versa*. Charles Kingsley, in Alton Locke, has given us a very clear picture of sweat shops in those days. A sweat shop is a place where a number of persons work under pressure, and for a minimum wage, and whose comfort is not considered. It is generally contract work, and it is usually done in shops at home, and the dangers are from working at home. The condition of affairs in New York is very bad, but in Baltimore it is not so bad, on account of the small houses and cheap rents. The Baroness Hirsch gave $1,000,000 to build cheap homes outside of New York, and rent them at moderate prices and attract factories. In the city some of the worst sweat-shop houses bring better rents than many larger houses on account of the enormous number of persons who may be crowded into a small space. He then gave the limits of the sweat shop system in Baltimore. In the congested district, strange to say, there is not much diphtheria and scarlet fever, and the child mortality is not very high; there is very little insanity, and the general moral tone is not so low as one would expect. Consumption, however, is on the increase in these sweat shops, but the disease is not carried away from these shops by the clothes on account of the pressure during ironing by a hot heavy iron in a hot room. The iron prevents in part the spread of the disease to these people. He spoke also of Russian Jews having a great love for their children. The charities providing free milk and ice have had good effects in decreasing the amount of tuberculosis. Many cases occur after the people come to this country, for, unaccustomed to working in a small room on a sewing machine, and the hard work in the small rooms, stooping position and dust inhalation, all tend to cause the disease. While they are a menace to the community in a certain way, still the bad effects react principally on themselves. It is extremely hard to do anything for these people through the health department, because they are dependent on their work and resist every attempt at inspection.

Dr. Rosenthal then spoke on the same subject, and said that those who work in factories were usually fairly well provided for, while those who work in their own shops and worked for wages, were usually the worse off. They usually work from twelve to fifteen hours a day, and in winter the rooms are almost air-tight. Men are smoking cigarettes, and probably spitting all over the floor. We ought to enforce the law and report the cases of tuberculosis, but this is almost impossible to do. In some places placards are posted outside of the door stating that contagious diseases are there. The public should be protected from the dangers of these diseases.

Dr. Savage: Being physician for the Hebrew Beneficial Society and also practising down town among the Russian Jews, I have had an opportunity to observe these people rather closely. Sanitary conditions among them are very unsatisfactory, and the number of victims to tuberculosis is very great. I agree with Dr. Welch that the immunity of the Jew to this disease is very considerable, but the sweat shop tends to overcome that. This sweat shop is an institution of recent origin and is distinctly an American feature. We do not know them abroad.

I would heartily endorse the points made by Drs. Gichner and Rosenthal that sweat shops should be stringently regulated

Mrs. Fendler: As to the question brought up by Dr. Rosenthal concerning expectoration in public places, we succeeded in getting a law to prevent that habit in street cars, and we tried to have it prohibited even on the pavements, but failed in that part. We have called upon the railroad companies and seen the placards which they are placing in the cars. The United Women of Maryland will shortly employ a man to watch the cars and see that this ordinance is enforced, if necessary by having some of its violators arrested.

Dr. Gichner: I should like to say that we have sufficient laws to regulate the sweat shops, but they are never enforced (*reading from the statutes of Maryland*).

This covers every point in our discussion, and if the law were carried out properly, so that the contractor and the property owner, not the workman, were pinched, there would soon be little cause for complaint. The difficulty lies in the fact that the contractor and the property owner are members of the fourth ward or some other club and seem to be out of the reach of the law.

Dr. Stabler: Is that Baltimore law?

Dr. Gichner: Yes, sir; I have been reading from the statutes of Maryland.

Dr. Stabler: It seems to me then Mr. President that all we have to do is to secure concerted action between the different societies interested in this subject in order to have these laws enforced. With such united action, the city authorities cannot resist the pressure.

Dr. Welch: I was very much interested in the points brought out by Drs. Gichner and Rosenthal. Especially interesting is the absence of any alarming statements concerning their subject. It would seem that the dangers of the sweat shop have been to some extent exaggerated, though they still present sufficient cause for consideration.

The fact that the garments are very often sterillized before distribution would seem to explain the fact that certain diseases are not spread by that means as frequently as one would, *a priori*, expect. But the spread of tuberculosis among those engaged in this work is a very important matter. As you know tuberculosis is the greatest scourge of the human race. The warfare against its spread deserves all the support of the medical profession, and I am heartily in favor of such a movement as has been inaugurated by the board of health in New York. It is ahead of general public opinion, and in fact ahead of medical opinion, but we shall grow up to it, for it is already making an appreciable diminution in the spread of tuberculosis. As I understand it the Hebrew is less susceptible to tuberculosis than the people of other races. The death rate among them is smaller than from the same cause among other people, and the fact that while their natural immunity is so great there is still an unusual death rate among those engaged in sweat-shop work shows that the danger must be greatly concentrated in such places.

It is interesting in this connection to recall the work of Prof. Pflueger. Heretofore the danger has been thought to be largely in the dry dust of the sputum; the sputum deposited on the floors, clothing, etc., becomes converted into dust by drying, is wafted about by the atmosphere, and is easily inhaled. Prof. Pflueger has recently shown a new fact, namely, that in the acts of coughing, sneezing, hawking and even loud talking, one sprays from the mouth and throat a very fine moisture, which is so light that it floats like the finest dust in the atmosphere for hours, and may be carried yards away from the individual, and he considers this really a greater danger than that arising from the drying out of sputum.

It seems to me the facts brought out in this discussion are well explained by the observations of Prof. Pflueger. The fact that in a room containing so many people the tubercle bacilli are floating about in a moist state in the atmosphere is a far more powerful means of contagion than that of inhaling them in a dry state. In New York the board of health has been given the power to close any room in which a tuberculous patient has died, and that room must be disinfected at the cost of the owner of the property. That is an excellent rule, and I should say would be quite proper to apply in these cases of infected sweat shops.

Of course, we are only interested in the sanitary side of the question, but there is a broad economic side, which is worthy of consideration.

The Need of a Hospital for Infectious Diseases.

By Dr. John S. Fulton.

Public policy and private interest alike require organized defenses against whatever threatens or may threaten the welfare of society. Against fire we have provided a most expensive department; against crime, prisons and police; against ignorance and vice, the libraries, churches, schools and reformatories; against want, the charity organizations; against ordinary sickness and casualty, the hospitals; against small-pox, vaccination; against diphtheria, scarlet fever, erysipelas and measles, we have only a long bill of mortality.

The ordinary pestilences may and do walk the noonday streets of Baltimore without fear of apprehension. Indeed, the testimony of our dispensary physicians and of our health officers is, that too often, dangerous infection drives its victims abroad upon the streets in the hope of apprehension. And a wild hope it is for such an unfortunate in this city of Christian charity. Every door is closed against him. He must literally run amuck with his wretched infection until he encounters the health commissioner. The health commissioner must then find a door which will open to golden keys, and the sick man is at length housed; but where, and under what measure of sanitary authority, the city health commissioner alone knows, and he wisely keeps his own counsel.

Cases of infectious disease remaining indoors are reported to the Health Department with more or less fidelity by the physicians. To govern such households there are wise ordinances, but their enforcement would require such an army of inspectors as we cannot aspire to until we can dispense with police. So it happens that the ordinary pursuits of an infected family are as a rule but slightly disturbed, and their daily work may be of such a sort that disease germs shall be dispensed in a laundry basket, in school or library books, in new or repaired clothing, in folded circulars, in milk, or by any one of a thousand untraceable routes. Indeed it would inflict most deplorable hardships, if the ordinances now in force were to be given their fullest effect, limiting or suspending, as they would, the earning power of those whose incomes are barely sufficient for ordinary needs at a time when their needs are extraordinary.

Some sense of proportion must be manifested in the administration of the sanitary laws. If infectious diseases must be quarantined and isolated for the protection of the city, then the city must bear the burden of such measures, for the householder may not justly be taxed beyond his own interest. There are but two ways of dealing fairly with such a problem. One is to isolate the infected house with all its inmates, providing everything for them during the whole term of infectiousness. The other is to separate and care for the sick during the same period, leaving the well to and with their own resources.

If what we call popular sentiment were as well leavened with justice as it is puffed up with penny wisdom, our city fathers would never have been persuaded to pass ordinances requiring domiciliary quarantine. Penny wisdom is wise enough to see that it is cheaper to maintain a hospital for infectious disease, than it is to enforce the quarantine ordinances. The need of an infectious disease hospital is not greater today than it was twenty years ago. Neither is it, nor will it ever be a less need. When this community realized that infected households ought to be placed under sanitary authority, public opinion was at that moment ready to appreciate the importance of a special hospital for infectious diseases, and the city has never lacked means to equip and maintain such an institution. It is very likely that we should have long since had such a hospital, if any strange monster had arisen to interrupt money talking, but diphtheria, scarlet fever, measles and whooping cough have yearly claimed their hundreds of victims, each, and we have yielded them with scarcely a protest.

The cost of an infectious disease hospital compared with that of a general hospital would not necessarily be great, but if the expense were large, the need would seem more imperative, since the expense of handling such dangerous diseases without a special hospital is inevitably greater. Indeed the need of a hospital for infectious diseases would seem to be proven as soon as the proposition is stated. Nevertheless one hears objections to such a plan, and such objections must be met. The query whether great risk is not involved in moving sick people may safely be referred to the doctors who have now abundant experience to guide them truly, both as to the general inquiry and the particular instance. It is often said that few citizens would consent to be taken or to send their friends to a "pest hospital." Quite likely a prejudice of this sort would have to be overcome, but the experience of other cities shows that such objections are very short lived.

Such a hospital must necessarily be in an accessible situation, and a loud outcry is sure to be made by the property holders surrounding any proposed site. When money speaks everybody listens, so that this objection will hold out longest. This question has been long and carefully studied with results demonstrating that the prevalence of infectious disease is not greater in the vicinity of the special hospitals. This has been conclusively shown with respect to each of the infectious diseases, except small-pox, about which there is slight doubt.

The details of such an enterprise may not be well discussed without special training, but one distinction between a general hospital and an infectious disease hospital, may be pointed out with some emphasis. The isolation of infectious disease is undertaken by the city, for the city's protection, and not primarily for the benefit of the individual. The city should, therefore, bear all the cost without respect to the circumstances of any patient. No one should be permitted to pay except for separate accommodation or extraordinary service.

The administration should not be committed to any board of charities, but the broadest possible line should be drawn to distinguish such a hospital from pauper institutions.

At the request of the United Women of Maryland, who are especially interested in this portion of our programme, I will read the following letter addressed to them, on the subject of special hospitals for infectious diseases, by Dr. Henry M. Hurd, Superintendent of Johns Hopkins Hospital:

BALTIMORE, *April 26, 1898.*

MRS. C. E. FENDLER, 1122 McCulloh Street, City.

DEAR MADAM:—In compliance with my promise I write to say that in my judgment a contagious disease hospital should be immediately established in Baltimore, for the following reasons:

1st. To insure the separation and isolation of contagious cases among the sick poor and to give such patients the best possible treatment. It now frequently happens that a child suffering from diphtheria, scarlet fever, or some other contagious disease, requires to be isolated in cramped, uncomfortable quarters, surrounded by other children or by members of the family who are engaged in their usual avocations. A case was brought to my attention a few weeks ago where the child suffering from diphtheria was cared for in connection with a family, all the members of which were engaged in the manufacture of clothing. The danger of the spread of diphtheria to other members of the family was very great. The menace to the health of the community at large by reason of the infected clothing was equally great. There being no infectious disease hospital it was necessary to continue to care for this patient under these disadvantageous surroundings. It became necessary to insist that the manufacture of clothing should cease in the house until the patient was cured. This cut off the support of the family and entailed many hardships. In addition to the danger of infecting other members of the family it should be borne in mind that it is impossible under these circumstances to give patients appropriate treatment. All forms of infectious disease can be better cared for in hospitals under skilled medical attendance and trained nurses than at home. This is especially true among the poor.

2d. A contagious disease hospital is required for the protection of other hospitals. Under the present circumstances of the city of Baltimore it is found that the presence of cases of infectious disease in hospitals is a source of menace to other patients. This is especially true in a hospital where there are children. A single case of diphtheria, scarlet fever or measles might break out in a ward and expose a large number of patients to infection and disease.

3d. An infectious disease hospital is urgently needed to enable cities to stamp out infectious disease. It is well known how much has been accomplished in the preventive treatment of small-pox by compulsory isolation of patients. It is not unreasonable to hope that through similar isolation of diphtheria, scarlet fever and measles patients, a similar prevention of these diseases may be secured.

These are some of the many reasons which seem to require that the city of Baltimore have a hospital for the treatment of infectious diseases.

Very truly yours,

HENRY M. HURD, *Superintendent.*

DR. WILLIAM ROYAL STOKES, city bacteriologist, then spoke of an ideal infectious hospital. He said in such a hospital cases are brought into an observation ward and kept there until it is seen what disease will develop. The case is then sent to the proper ward after the diagnosis is made; the observation room is then disinfected and cleaned before any other patient is admitted. Each department for such diseases as measles, scarlet fever, etc., is kept entirely separate, the nurses being separate and every department being cut off from the others. After the patient is convalescent, he is taken to another room with cases of the same kind, and is kept there until the period of infectiousness is over, that is, until the germ has disappeared. Small-pox is not treated at such hospital, but in a separate institution.

DR. C. HAMPSON JONES: I have been in the health department of this city nearly two years, beginning first as an inspector. One of my first duties in entering upon my work as an inspector was to call upon a family in a certain portion of this town reported to be suffering with scarlet fever. I found that four children in this household had scarlet fever and one had died of diphtheria. The four referred to were well advanced in the course of convalescence, and the desquamation had practically ceased, for we could not see the scales though we might suspect that there was still some desquamation. The mother and father were exceedingly poor, had been out of work for a long time, and had no prospect of early employment. It was in the month of December. One girl, about eighteen years of age, stayed at home to take care of the sick and look after the general work of the household. Two other children, about fourteen years of age, were special salesladies in two of our very popular toy shops. Just before Christmas, when the stores were most crowded with shoppers, these two girls were going directly from an infected house to mingle with the crowd of shoppers. Of course they took the germs of the disease with them, and I do not know whose child died as a result. We could not isolate that family without paying the cost, not only of medicine, but of food and clothing as well. I simply ordered disinfection of the house and allowed the inmates to go on with their work.

There is one thing I would like the people to distinctly understand. Public medical officers must be associated with politics, but do not think that because we know something about politics that we do not also know something about the science of medicine and the prevention of disease. It depends upon you, and you alone, whether your health officer is going to be worth anything. If you are not willing to submit to some of the disagreeable things that come home to you in our regulations, then do not expect the health officer to accomplish very much. As our worthy president has said the public must be educated, and if not so far educated that they are intelligently willing to obey all the rules and regulations of the health department, then there is no use in having health boards.

Dr. Wm. J. Todd: I was called about three months ago to attend a case of scarlet fever, when so far as I was aware, there was not another case within five miles. Upon tracing the probable infection, I found that a father in some part of the city had been nursing his child through the night with scarlet fever. The next morning he carried some papers to the office of this somewhat prominent business man, who took the papers home with him in the evening, spread them out on his table for inspection while his children were playing about the room. In the course of time his child developed scarlet fever, and this was the only source of infection that I could find. The carelessness of the first parent was the means of bringing the disease to the house of the innocent party and causing a great deal of distress as well as waste of time and money for that family.

Dr. Zipka, of New York: The value of an infectious disease hospital is well shown in the case of the Willard Parker Hospital, of New York. It is situated upon the river bank, and that, by the way, makes a delightful location for such a hospital. They have specially trained physicians for the care of these diseases and special nurses. The patient is brought to the hospital in an ambulance, and the house from which he came is disinfected and kept for a certain length of time under the observation of the board of health. If the case cannot be brought to the hospital the house is placarded, and that is another good means of preventing the spread of these diseases.

Mrs. Fendler: I wish to say that the Willard Parker Hospital is not a hospital for contagious diseases in the true sense, but is only a reception hospital for such cases. The patients are detained there until diagnosis is certainly made, and then removed to a hospital on the island. This latter hospital is constructed in the manner described by Dr. Stokes.

Dr. Welch: The need of a hospital for infectious diseases is so apparent that no one questions it, and the only remarkable thing is that we haven't it already. We have had a little experience in that line which may be worth reviewing. Some of you may recall an address I made to the Charity Organization Society, in which I dwelt upon this question especially, though by no means for the first time. Interest was really stimulated at that time, a committee was appointed, the matter was discussed, brought before the City Council, the approval of the Mayor and City Council was obtained, and $30,000 were appropriated for the construction of such a hospital. No difficulty was met with that far. Why did we not get the hospital? Because no one would permit it in his ward. Every member of the council was willing to have it built in anybody's ward except his own. Then there were disagreements among the medical men as to the way it should be built. Some wanted temporary structures built upon the cottage plan, while the modern conception is that it should consist of a modern, well constructed building, to remain permanently. The public was naturally confused on account of these differences of opinion, and I confess I lost some interest in it when it was proposed to build on the old quarantine grounds. This would not in my opinion do at all, for such an institution to be of value must be in an accessable place. We found a place at last to which we thought there could be no objection. It was at the extreme limit of Gay street and neighbor to three graveyards; not a cheerful prospect to the patients perhaps, but even here we found the property owners making objections.

The name is an objectionable one, and people call it a "pest house." It would be better to call it a Municipal Hospital, for that does not suggest exactly what it is intended for. Such an institution is absolutely safe, there is no danger to any one in the neighborhood, and the only valid objection that has been raised is that small-pox might be conveyed from it. Small-pox should not be treated there, but should have a special hospital. I think Dr. Jones, although he did not mention the fact, has in view a suitable location that can be secured.

I hate to see this interesting discussion, and the work that the women have done in bringing the question forward go for nothing, and I hope during this meeting a committee will be appointed to call upon the proper authorities in regard to the matter. We must have such a hospital, and our past experience will assist us in avoiding certain pitfalls in the future.

Vaccination and Revaccination.

By William J. Todd, M. D., Mt. Washington, Md.

This is a subject with which we are so familiar, that I am afraid both we, the physicians, and we, the people, whose lives and health are to be guarded, have of late treated it with neglect and perhaps with contempt.

To day we know little or nothing of the horrors of small-pox, except that which we have learned from history. Very few of the younger generation of physicians have seen a case of small-pox, and few of the older men have experienced an epidemic, for which fact we owe many thanks to the discovery of Jenner.

This discovery and the application of it, the great benefits that have accrued to mankind from it, not only in the saving of life, but in the increase of the average length of life, the decrease of impaired constitutions, of partial or total blindness and disfigurement of features—all this, which previous to Jenner's day resulted from that offensive, most loathsome and most contagious of all diseases—small-pox.

If medicine had made no other discovery, made no other advancement during the past century, medicine by this one act alone would have covered herself with a crown of glory as bright and as lasting as the sun.

I quote at length from Dr. Moore's article on "Small-pox" in the *Twentieth Century Practice*:

"In Europe, small-pox was one of the most widely distributed, most frequent and most destructive of pestilences up to the introduction of vaccination.

"Before the introduction of vaccination the annual mortality from small-pox in England and Wales alone, was at the rate of 3,000 deaths in every 1,000,000 of the population; this, according to the census of 1894, would correspond to a loss of some 87,000 lives per annum.

"In 1890, small-pox caused only fifteen deaths in England, and the average annual number of deaths from this disease in the ten years, 1881 to 1890, inclusive, was one seventieth part (1-70) only of the death rate of pre vaccination times.

"Lord Macaulay, writing of the death of Queen Mary in 1694, thus describes the ravages of small-pox: 'That disease, over which science has since achieved a succession of glorious and beneficent victories, was then the most terrible of all ministers of death. The havoc of the plague had been far more rapid, but the plague had visited our shores only once or twice within living memory, while the small-pox was always present, filling the churchyards with corpses, tormenting with constant fears all whom it had not yet stricken, leaving on those whose lives it spared the hideous traces of its power, turning the babe into a changeling at which the mother shuddered, and making the eyes and cheeks of the betrothed maiden objects of horror to her lover.'"

Sir Gilbert Blane quoted a report of the Hospital for the Indigent Blind to the effect that two-thirds of those who applied there for relief had lost their sight by small-pox. (*Medico-Chirurgical Transactions*, Vol. X, p. 32.)

During the year ending December 31, 1821, the total number of deaths from all causes in Baltimore city was 2,015. Of this number twenty-one died of small-pox.

During the year ending December 31, 1822, 122 died of small-pox; total deaths, 2319.

In the year 1823 there were two deaths from small-pox occurring in January; total deaths, 2,108. (*The Philadelphia Journal*, Vols. I, IV, VI.)

My experience and the experience of other physicians with whom I have compared notes, leads me to fear the pendulum has swung to the other extreme in our Maryland, that we are neglecting this most successful preventive of disease. I find upon reviewing the literature on this subject that the cause of the recent outbreaks of small-pox in this country and other places have been attributed to neglect and carelessness in not vaccinating properly. No sane man with the evidence before him will deny the value of vaccination.

I quote from the Maryland laws relating to the public health, ao compiled by Dr. James A. Steuart:

"1872, Chapter 257, Section 6.—It shall be the duty of every parent and guardian to have his or her child vaccinated within twelve months after its birth, if it shall be in proper condition, or as soon thereafter as practicable, etc.

"Section 7. No teacher in any school shall receive into such school any person or a scholar until such person shall produce the certificate of some regular practising physician that such applicant for admission into the school has been duly vaccinated," etc.

The law regarding the vaccination of children within the first year of its life is usually ignored. Children are not vaccinated until the school age, and only then because, as we see above, the teacher must not admit them to the school until a certificate from a physician has been secured, stating that the child therein named has been duly vaccinated. I have been credibly informed that even this precaution is disregarded in some places. (Dr. S. J. Fort's paper, November 19, 1897, Maryland Public Health Association.)

The teacher does not know, nor inquire, perhaps, if the particular child has been properly protected from small-pox; in fact, she cannot refuse the certificate if she should know otherwise.

Colonel Charles B. Rogers, of the Baltimore county schools, tells me he has frequently felt sure of the insufficiency of the protection of a vaccination in some school children, but was powerless to act, as a physician's certificate was on file with the teacher.

My attention was called recently to this subject, by the following cases:

Elmer S—— had been transferred from one county school to a second. He did not bring the physician's certificate of vaccination with him, which he had deposited at the school last attended. He came to me for my signature to a second blank, which I refused, as I developed, upon examination, the following history:

Elmer applied some three years ago to a physician for vaccination, as he was about to enter the public school, and his physician vaccinated him and signed a certificate at once. The vaccination did not take, yet the letter of the law had been complied with. The teacher was satisfied; she had the physician's certificate that the boy had been duly vaccinated to protect her. I ask, was the spirit of the law complied with? The boy certainly was not protected.

Another case in point: F., D., P. and S., aged six, eight, ten and twelve years respectively, members of the same family. F., the youngest, was old enough to enter the public schools and must be vaccinated, which I did. I found, upon inquiry, that D. and P. had been vaccinated the year before. S. had been vaccinated three different times. All were attending school and had the necessary certificates. Thinking it best, I revaccinated, and all suffered the usual symptoms of an original vaccination.

With these children, the physician performing the vaccinations, signed the certificates before the children left his office, not waiting until he was sure beyond doubt the result was a success.

The immunity in the oldest child by the first vaccination, if a success, might have been exhausted and revaccination necessary, but my impression at the time was that the different vaccinations were not successful.

Another source of error is the habit of physicians to examine the arms of children who have been vaccinated, from five to ten years and more, and pass them, when the test of revaccination should be made.

"If thorough vaccination and revaccination of whole communities were possible, small-pox would almost disappear."—"The Practice of Medicine," Wood & Fitz, 1897, p. 116.

Rohe, in his "Text book of Hygiene," (edition 1894, p. 342,) writes: "In order to secure permanent protection against small-pox, revaccination should be performed after a certain interval. Some place the period at which this second vaccination should be done at five years, while others allow a longer interval—seven, eight or ten years."

Dr. Osler records in his work on "Practice," p. 51, an epidemic of small-pox as late as 1885. Small pox had been prevalent in Montreal in 1870 and 1875. The city was free from it until 1885. During these ten years the people opposed and neglected the operation, so that the younger population was unprotected. The epidemic of 1885 started February 28, from an imported case from Chicago, a conductor of a Pullman car. From this case the disease spread to such an extent that within nine months 3,164 persons died from small-pox in Montreal, the population at that time numbering some 200,000.

"Revaccination should be performed between the tenth and fifteenth year and whenever small-pox is epidemic. The susceptibility to revaccination is curiously variable, and when small-pox is prevalent it is not well, if unsuccessful, to be content with a single attempt." (Osler, p. 65.)

Dr. John Campbell, Medical Officer of Health of Gloucester, England, writes in the London *Lancet* of April, 1897:

"The population of Gloucester was 41,000, of whom very few adults had ever been revaccinated, and since the guardians ten years ago ceased to enforce the acts, the great majority of the children, forming probably nearly one-fourth of the inhabitants, had remained entirely unprotected. Indeed, the anti-vaccinationists boasted that Gloucester was the least vaccinated town in England and had enjoyed immunity from small pox for twenty years. The first cases occurred in June, 1895. In January, 1896, forty-one cases were reported: February, 150; March, 518; April, 783; May, 367; June, 112; July, 23—total, 1,994.

"Seven hundred and forty-two cases were treated in hospitals; the rest were treated at their homes.

"There were 710 cases under ten years of age, of whom twenty-three had been vaccinated and 687 had not been vaccinated. Of the vaccinated, none died; of the unvaccinated 278 died.

"Between the ages of ten and twenty years there were 309 cases. Of this number 260 were vaccinated in infancy, of whom nine died; forty-nine were unvaccinated, of whom thirteen died.

"There were 925 cases above twenty years of age. Eight hundred and eighty-nine were vaccinated, with ninety-nine deaths; thirty-six were unvaccinated, with fifteen deaths, thirty-five cases occurring in persons who were said to have been vaccinated in infancy, but who show no marks; they were practically unprotected and fifteen of them died."

The elder Flint (6th edition, 1886, p. 1046) wrote regarding revaccination: "It is evidently better that the period should be needlessly short than too long. With our present knowledge the propriety, if not importance, of revaccination every five years is to be advocated. In cases of known exposure, or when small-pox prevails as an epidemic, it is proper to vaccinate without regard to previous vaccination. Revaccination, in fact, is always proper as the readiest and safest test of unsusceptibility to small-pox."

"Revaccination is essential at not longer periods than eight or ten years. * * * Whenever any person is exposed to an epidemic of small pox, revaccination should be insisted upon. * * * In cases of failure to 'take' there should be repetition of the vaccination almost indefinitely if there be positive exposure to small-pox."—"Practice of Medicine," Wood & Fitz, 1897, p. 118.

In closing this paper I would urge upon parent and guardian not only is vaccination, but revaccination, necessary. Can you doubt it when you have such evidence as Dr. Campbell of Gloucester?

To the teacher: As the law now reads you cannot do more than have a child duly vaccinated, but urge upon him the value of a revaccination, and during an epidemic of small-pox frequent vaccinations. For yourself, be revaccinated frequently; you owe this to yourself for your own protection.

I would suggest to the County Commissioners that the money spent for vaccination and revaccination is not an expense, but an investment that will pay a large percentage of profit in the future health of your county.

I will again urge my measure of last year. Appoint a physician to have charge of the health and sanitation of certain specified schools, to visit them daily, vaccinate and revaccinate pupils and teachers when he thinks it necessary, dismiss sick children and re-admit the convalescent.

The Commissioners should furnish the best vaccine virus and pay the physician a good salary for his work, not the beggarly pittance of fifty cents for a vaccination that is now promised and sometimes not paid.

We physicians should give more attention to this operation, procuring fresh virus, use the necessary precautions to prevent a mixed inoculation, postponing the signing of school certificates until satisfied the operation has been a success, performing revaccination if necessary to satisfy ourselves.

In the families we attend advise the revaccination of all children when they reach the age of ten years.

Dr. W. R. Stokes: I wish to speak of one sample of liquid lymph that has come under my notice. On making culture from it, I found it filled with bacteria, the ordinary pus organisms. Of course, if one organism were introduced into a fluid of this kind, it would rapidly increase, whereas in the dry form there would not be the same opportunity for increased growth. This might be mistaken by uninformed persons for glycerinated lymph, which is free from pus bacteria.

Dr. J. F. Martenet: Vaccination in the State is not under as complete control as that of the city. If the law had been enforced, we would be able to say to-day that practically every person in this town is properly protected against small-pox. We have vaccine physicians, and the law requires that they shall visit every house in their ward for inspection, but there are thousands of children in this city, who have never been asaed whether they have been vaccinated or not. Their homes hkve not been visited, and they only go to the physician when they are refused admittance to the schools until a certificate is secured. Usually, the physician vaccinates them, gives a certificate at once, and hears no more about it. In many instances the children are put off to suit the convenience of the physician, and I could show many letters from doctors begging for virus in haste, because the school term is about over, and the children must be vaccinated before its close. They have been permitted to attend the session all the season without protection.

Dr. Thos. B. Owings: I am glad to hear this discussion in regard to vaccination, for I have always felt a great interest in the subject. There is a law in Baltimore city, but at present it does not apply to the counties, and it is often the case that children are not vaccinated until they are large enough to send to school, and out of the way of the mothers. They go to the physician for vaccination, he scratches the arm, gives a certificate and the child armed with this goes to the teacher with it, and thus exempts the latter from the effect of the law. The physician has never seen the arm again, and does not know whether vaccination has taken or not. I have had hundreds of cases of this kind under my notice, and I am satisfied that if an epidemic of small-pox should break out in our State, thousands of school children would become its victims. We should have a law compelling parents to take children before they are six months old to a physician for vaccination, and failing to do so they should be fined.

In reference to revaccination, I think I learned a point of value some years ago in my own case. I had just recovered from typhoid fever, and after seeing a suspected case of small-pox, I used the virus on my own arm. It took beautifully, and since that time I have always advised my typhoid patients to be revaccinated. My experience has been that they usually take it just as if they had never been vaccinated.

Dr. J. S. Fulton: In this, as in all other sanitary matters, people do not practice vaccination, because they do not realize the importance of the measure. That does not apply to laymen exclusively, but the profession as well, interest in the question having nearly subsided. The changes that have taken place in the last hundred years, have surpassed all expectations. I had intended to prepare a chart, which would represent this change, but it is practically impossible, for if any small object were used to illustrate the mortality of small-pox to-day, this room would not be large enough to contain the proportionately larger object, which would represent the ravages of the same disease a hundred years ago. From 1838 to 1890, small-pox decreased in the ratio of one to 1064, and if you take one inch to represent the disease to-day, to represent that of 1838, would require a column as high as the spire of Mt. Vernon church, or to take some small object that will bring before your minds a clearer conception of what has occurred, let us use the thickness of a brick (two and a-half inches,) to represent small-pox as it occurs to-day, then to represent it as it occurred in England in 1838, we would require a pile of bricks as high as Washington monument, and if you were to go back to 1776 you must add 75 per cent. to the height of this column; in other words, your pile of bricks would equal the spire of First Presbyterian church on top of Washington monument. So you see we have lost the sense of value of the great triumph of vaccination.

Two centuries ago everybody had small-pox, and people did not expect to escape it, but only prayed not to die of it. We must remember all these things, because otherwise we have no standard to-day to show what we have escaped through the wonderful work of Jenner.

DR. AUGUST STABLER: In regard to the question of glycerinated virus I was quite interested in that several years ago when I noticed something about it in the journals. I secured a good primary vaccination on a healthy infant and preserved some of the virus in 90 per cent. glycerine. I kept that for twelve months, vaccinating all cases from it, and I would say that I never had as satisfactory a virus before. It acted with certainty and the vesicle produced was in every instance typical. I have repeatedly in vaccinating my own children failed the first time to secure a vaccination, because the virus was not strong enough. In such a case I immediately discard that virus, secure more and repeat the trials until I get a typical sore and then, taking the lymph from that, vaccinate my other cases. I have never failed to get a good sore upon a primary case if taken from the arm. I recently vaccinated my own family from the arm of my baby, and I have preserved some of that lymph in glycerine.

DR. WELCH: I am very much interested in what Dr. Stabler has said about glycerinated lymph, and I am inclined to emphasize the immense amount of good that may come from this. It has nothing to do with the liquid lymphs referred to by Drs. Martenet and Stokes. The glycerine has the power of eliminating all the accidental contaminations that result from the presence of contaminating organisms in the lymph. It has only recently come into general use and is referred to in an editorial of a recent number of the Lancet. I believe it will put an end to all the anti-vaccination societies. I am glad that the matter has been brought up, for it is evidently not clear to all here what an immense step forward has been taken in the use of glycerine to sterilize the lymph.

AFTERNOON SESSION.

WEDNESDAY, MAY 11th.

Report Upon an Inspection of the Public Schools of Olney District, Montgomery County.

BY MR. CHAS. R. HARTSHORNE.

At the December meeting of the local Board of Health of Olney District, Montgomery County, Md., a committee was appointed to make certain inquiries as to the sanitary condition of the public schools of that district. The detailed report of this investigation is in the hands of the State Board of Health, also the County School Board. The general results of this investigation are of interest to the public since these schools are possibly in better condition than the average of schools in the country districts. At least two of the colored school buildings were found unfit for occupation during the winter months on account of decrepitude resulting from age and abuse.

None of the buildings have a cubic air space commensurate with their seating capacity. At least six of the buildings have sufficient air openings, if the register were provided some method for circulation of air. Three of the colored schools must be seriously overcrowded when all the pupils are present, the cubic air space ranging from 51 to 131 feet for each person.

One school room only out of twelve in the District has any means provided for circulation of air without opening door or window. One room having the largest cubic air space per pupil, viz., 283 feet, was found very close and uncomfortable. The teacher complained that it was always so, and only by keeping the window open could the air be made even measurably pure. This building was tight and had no provision for ventilation except by a trap door, which merely drew off the heated air. The contrast between this room and the one with provision for free circulation of air was very marked. The latter, with only 150 cubic feet of air space for each pupil was always comfortable, with air pure and pleasant with door and window closed, while the former, with 283 cubic feet of air space per child was always close and uncomfortable, unless draughts were admitted from door or window.

In only one school were the children required to furnish and use individual drinking cups. Since the investigation, other schools have adopted the plan. All of the teachers realized to a greater degree than we expected, the responsibility resting upon them, when a case of infectious disease is found among the scholars, or when one or more have been exposed to infection. The usual steps taken by the teachers, may be summed up as follows: The child suffering from, or who has been exposed to an infectious disease, is sent home and not allowed to return until the teacher is satisfied by a physician's certificate or otherwise, that all danger is passed. In the case of diphtheria or scarlatina in the school, nearly all the teachers said they would notify the School Board, and close the school.

Upon the subject of vaccination, the teachers were not so clear. One had her certificates ready for inspection. One had made arrangements to have those vaccinated who needed it. One had only one pupil in school unvaccinated. One teacher had never heard of the law. Five stated that they had neglected it, because the law is not enforced, and they considered it a dead letter. The teachers reported that no case of contagious disease had occurred in any of the schools this year. A few cases were known to have occurred in the district, but did not spread beyond the family where first appearing. One school was closed for a few days in order to prevent certain children known to have been exposed to a case of diphtheria, from endangering the other pupils. This absence of even sporadic cases speaks volumes for the foresight and care of the public school teachers. The committee was only instructed to make inquiries along the lines above enumerated. Incidentally however, they noted and called attention to faulty construction and arrangement of desks and seats.

In nearly all the schools the desks are antiquated and improperly arranged. In some cases children were compelled to lean forward at a considerable angle in order to read a book placed on the desk.

The committee was much pleased with the intelligence displayed by the teachers, both white and colored, and the evident interest taken in sanitary questions. The Maryland school teachers will undoubtedly co operate with the Public Health Association whenever plans for such work are formulated.

After hearing the report of the committee, a set of resolutions were adopted, and ordered sent to the County School Board. The resolutions contained the following recommendations:

1. That after consultation with the State Board of Health, your honorable body issue instructions to teachers as to the steps to be taken when one or more pupils have, or have recently been exposed to a contagious disease.

2. That, as soon as funds will admit, all school buildings be provided with a system of ventilation which shall admit fresh air under the source of heat, and draw off foul air near the level of the floor. In the construction of new buildings this should always be done, and the saving in fuel will soon repay the small additional expense.

3. That, when the County School Examiner visits a school, he should satisfy himself that the teacher understands and enforces the State law with regard to vaccination.

4. That, he also recommend that all pupils provide and use individual drinking cups.

Ventilating Small Schoolhouses.

By Dr. August Stabler.

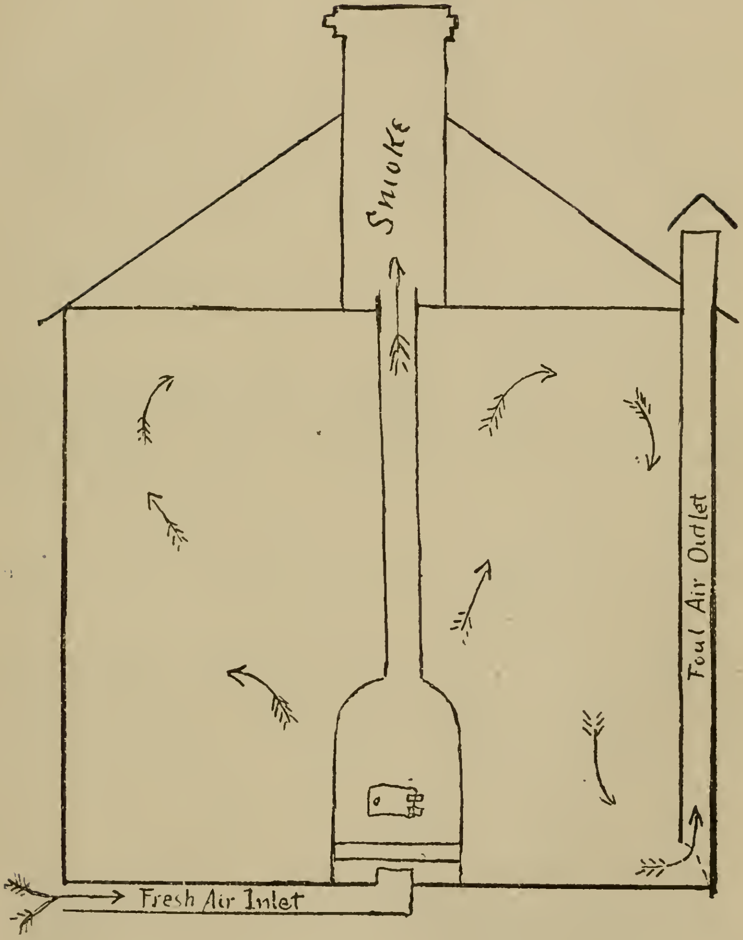
In private dwellings, however humble, it is everyone's privilege to sit near the fire where the floor is warmed by direct radiation and the air kept in motion by the draught of the fire. In a place of public meeting, whether church, school or town hall, the conditions are different.

The building being occupied only a portion of the time, the floor in cold weather is always cold, except within a circle of a few feet around the red hot stove. The air space, having but small ratio to the seating capacity of the building, soon becomes surcharged with carbonic oxide, and dust and smells, and the presiding officer orders the windows open. Then someone who may have a tendency to rheumatism, gout, or disease of the heart, lungs, liver or kidneys, has to sit in a cold draught with feet upon a cold floor, after having been exposed to the depressing influence of bad air. Nothing but ignorance on the part of those who planned and constructed the building and of those who own and manage it can excuse or explain this almost universal practice.

In a public meeting in cold weather a window should never be opened, and the audience should never be compelled to breathe foul air. Those who have been successful in avoiding both these evils, all agree that two things are necessary, and these may be very cheaply supplied, even in a building already constructed.

First, fresh air must be supplied through a large metal or wooden flue discharging under the sources of heat. This inlet is provided with a gate or valve which may be partially closed in windy weather, but so made as never to shut tight.

Second, a ventilating chimney with a large opening near the floor like an open fire place. If the stove pipe can be passed up through this chimney, then the waste heat of the stove pipe will cause a constant upward current of air in the chimney.


Smoke
Foul Air Outlet
Fresh Air Inlet

If the building is already constructed, and funds will only allow the cheapest plan, then a chimney made of plain wooden boards in the corner of the room, running up several feet above the roof, and surmounted by a suction cap, (such as the "Star" ventilator) has been found to answer the purpose nicely where not more than thirty or forty people are present at one time.

The opening near the floor should be the full size of the chimney, and the size of the chimney should be governed by the number of people who are to occupy the room. A chimney one foot square has been sufficient for 30 people, and the inlet should be about the same size. The opening into the chimney near the floor should never be closed under any circumstances, and if the upward current is not sufficient, it can easily be increaaed by burning a small coal oil stove or lamp inside the chimney.

After this system of ventilation is put in, no windows or opening in the upper part of the room should ever be opened, as the warm air from the stove will in that case go straight up and out. The floor will remain cold, and the air in the lower part of the room will remain stagnant.

As mentioned in Mr. Hartshorne's paper, we have one schoolhouse in the county thus ventilated, and we have the assurance from our county school commissioners, that as soon as they have the necessary funds more buildings will be thus improved. The expense in this case was about $15.00 which included $5.00 for the chimney cap.

In planning a new building, one chimney should be made to both smoke and foul air. This plan is cheaper and more effective than two chimneys.

While there is nothing new in the principles involved, our investigations prove that there is much need of popular education on the subject, and we hope therefore, that each member of this association will do what he can to get the schoolhouses of Maryland properly warmed and ventilated. We want for our children not only free schools and free books, but free ventilation.

Medical Inspection of Schools.

By Miss Eliza Ridgely, Representing the United Women of Maryland.

The larger acquaintance one has with the work of Medical Inspection of Schools the more one must see its importance.

As early as 1882, the Board of Health of the city of Boston, Massachusetts, recommended to the School Board a thorough bi-weekly disinfection of the school houses, but their suggestion was not adopted because of the cost, the trouble to the janitors and the uncertainty of success.

In 1890 the Board of Health proposed the daily medical inspection of schools to discover infectious diseases through examination of the children, and also to advise the teachers as to the disposition of pupils affected. Yet it was only after a struggle of four years that the board was able to begin the work on November 1, 1894, under the urgency of a severe epidemic of diphtheria.

The city was divided into fifty districts, averaging about four school houses and 1400 children apiece, and these were placed under the care of well qualified and discreet physicians, selected by the Board, one for each district, at a salary of $200.

Their first duty is to visit daily each master's school early in the morning session, to examine the children reported ill, and to record in books provided for the purpose and kept by the master the diagnosis in each case and any action that may be taken. In throat examination, slips of clean pine, costing 1-10 (one-tenth) of a cent, are used as individual tongue depressors, and may be easily destroyed and replaced. Should the child be too ill to attend school, the inspector advises the teacher to dismiss him, and if one is found with a contagious disease, he is ordered home and the case reported to the Board of Health.

No professional treatment is given to the sick children—this is supposed to be supplied by the family physician or in the hospital.

The teachers and inspectors work well together. In Boston, these inspectors also look after the proper isolation at home of children attacked with infectious or contagious disorders; for the Boards of Health in Massachusetts are required by law to take charge of such diseases dangerous to public health. To this end each inspector daily receives a bulletin of cases of diphtheria and scarlet fever reported to the Board during the preceding twenty-four hours, and each of these officers selects those cases in his district and visits them at their homes, merely to judge if they are properly isolated—*not* to prescribe for the case. If properly isolated, the inspector leaves a card for the family doctor announcing the official visit, and he also notifies the Board of Health whether isolation is complete. If not so, the patient is sent to the hospital. Another official visit is made to the patient on recovery, and his discharge is reported to the Board of Health. In a case of diphtheria, a negative report from the health laboratory is necessary, and in scarlet fever desquamation must have ceased before the patient is again admitted to free intercourse with the public.

In fine, the medical school inspectors supply the Board of Health with trustworthy information, enabling them to act intelligently in protecting the school children and the people in general from the spread of infectious diseases.

January 1st, 1896, a card was issued in Boston to physicians explaining the work of inspection, and giving samples of various notices to be used by the inspectors—among which we find a courteous form of notification to the family doctor concerning the visit to investigate isolation.

Dr. Samuel H. Durgin from whose reports the information concerning the work in Boston has been drawn, stated in June, 1897, before the annual meeting of the Massachusetts Medical Society. "This work has now been in successful operation in Boston for two years and seven months, has constantly grown in favor in the medical profession, among the school teachers and in the community at large. There is every reason to suppose that under the influence of this daily medical attention, every teacher will become more interested and expert in the outlook for and detection of any existing illness amongst the children under his or her care. Every parent may feel that his child is less exposed to disease while in school, and less likely to be ill without immediate attention from teacher or physician than was formerly the case * * * I am satisfied, that it would be hard to find a field for medical inspection and supervision which presents equal facilities for the early detection of diseases, or which offers more satisfactory results."

The first work of the kind was started in Boston—the first in this country, perhaps in the world—the nearest approach to it being in Brussels, where the Bureau of Hygiene employs school doctors and sends to them pupils suspected of having infectious diseases. In New York the plan was tried first in March, 1897 when 149 medical school inspectors were appointed. Here the method of work is the same in general outline, but inspectors do not visit the patient at home, the question of isolation being apparently managed through the bacteriologists of the Board of Health, and the inspectors of the division of contagious diseases. This must surely entail greater delay in the isolation of cases, and yet for the success of the Boston plan, quite a high order of diagnosticians should be employed to avoid mistakes. On the whole, however, for the good of the public, the Boston method would seem the better.

The whole number of school children examined in Boston in 1896, and found ill, was 8,964, of whom 267 were suffering with specific infectious diseases of which the children as a rule were unaware because of the early stages or mild form of the attack; but all were in a condition to spread the malady.

There were in June, 1897, about 85,000 children in the public schools of Boston, and over 1,500 teachers, and about 13,000 pupils in the parochial schools.

In New York, the report on inspection for the first three months, (to June, 1897,) said that out of 63,812 children examined, over six per cent. or 4,183 were excluded from school because of some infectious or contagious disease. The report of chief medical inspector, Dr. A. Blauvelt, from March 25 to December 24, 1897, stated that 290 schools were visited with an average attendance of 231,962 children, and of 108,628 children examined, 7,548 were excluded for measles, diphtheria, scarlet fever, croup (a few only), whooping cough, mumps, contagious diseases, parasitic diseases of head or body, chicken pox and skin diseases.

These statistics from two of our large cities would surely prove that medical inspection of schools is an important factor in the advancement of the health of any city or town, and therefore, it is a matter well worthy the earnest consideration of the Public Health Association of Maryland.

Periods of Incubation and Infectiousness.

By Dr. Charles W. Mitchell.

The duty has been assigned to me of speaking to you about periods of incubation and infectiousness. I shall be guided so far as I can by the very able report we have heard today. It seems to me none of us can fail to have been very strongly impressed by some of the figures quoted here this afternoon. Two hundred and sixty six cases of infectious disease attending the schools of Boston. That is enough to fix our attention and to open our eyes to the necessity for the medical inspection of schools. This is possible only in cities or certain of the larger towns, and I think it would be well to say something about certain facts with which those who have to do with public schools should be perfectly familiar.

What do we mean by the period of incubation? It is the time which elapses between the entrance into the body of the agent that produces a disease, and the appearance of the symptoms of the disease; or to put it in a more practical way, it is the time which elapses between the date of known exposure, and the coming on of symptoms. It is the time during which such a case as that referred to by Mr. Hartshorn should be regarded as of suspicious character.

Now this period varies considerably in different diseases, and even in the same disease the range is a rather broad one. It is important therefore, that teachers and superintendents should be informed on this matter, so that if a suspicious case appears in the community, those exposed to the chances of infection, may be excluded from communication with others, until the period of incubation shall have passed.

Now in regard to the term infectiousness. By the period of infectiousness, we mean the period during which either the patient, or some of the discharges from the patient, retain the power of communicating that disease to another susceptible being, either human or animal. The most important point in this regard, was hinted at by Miss Ridgely. It is that not only the acute ordinary symptoms of the disease, but many of the after-effects constitute elements of danger and may serve to send the disease through the neighborhood. This is well marked in scarlet fever where months after all acute symptoms have subsided, some discharge that contains the germs of the disease may persist for months after convalescence and return to school, and may act as a spreader of the disease. People must also understand that in many diseases of childhood, infectiousness is just as severe in mild cases as in the severe forms of the disease. All sanitary officers of course know, and many of you know, that the mild or unsuspected cases are most dangerous to a community.

I cannot let this opportunity go by without a strong protest against a custom that is quite prevalent here; namely, the habit of deliberately exposing children to contagious diseases. It is a familiar experience, that during an outbreak of measles in the household, the mother will bring her other children to play with or even to sleep in bed with the sick child, in order to have the whole trouble over at one time and so save expense and future bother. People take it for granted that every child must go through these experiences, and they overlook the fact that some of these diseases at times assume great virulence and cause many deaths.

I have had a sad experience in this line within the past few months. The mother of a little six year old boy who had contracted measles, not only would not remove her little girl, one year of age, from the room, but made her sleep in bed with the brother, and she has lost her baby. The first case, in the older child, went on in a mild way, but at the tender age of thirteen months the disease is dangerous, as she learned at great cost. I lay some stress upon this because it is frequent experience.

Scarlet Fever.

I shall now briefly consider the diseases that are most commonly met with during the period of school life. The first is scarlet fever, and contrary to common belief, this does not rank among the most infectious of the well known diseases of childhood. About one-half of us enjoy a natural immunity towards this disease. Some years ago, in the Farralone Islands, whose inhabitants have little intercourse with the rest of the world, there had passed a period of sixty or seventy years of absolute freedom from scarlet fever. Here was virgin soil for the growth of this disease. Scarlet fever broke out and it was found that of all people exposed less than fifty per cent. acquired the disease.

The period of incubation of scarlet fever is short. Sixty-six per cent. of susceptible children exposed to the disease will begin to show symptoms in from two to four days, and eighty-seven per cent. show symptoms between two and six days. From the school teacher's standpoint what does this mean? Any teacher who has in her school a boy whose brother or sister has scarlet fever should regard that boy with suspicion and keep him away from school for at least one week. At the end of that time he, showing no symptoms of the disease, may with safety attend school.

As regards the infectiousness of scarlet fever the period is very long. It is not particularly infectious in the early stages of the disease, before the eruption comes on, but during the eruption, and particularly when the skin is peeling, there is great danger. The period of infectiousness should be regarded as probably not less than six weeks, and it is much longer than six weeks if the child has a running from the ear, a sore throat, pleurisy or pneumonia, or if it had inflammation of the kidneys following the disease. Many cases are on record where children who had mild attacks of scarlet fever served to communicate the disease to others thirteen or fourteen weeks after the apparent close of the trouble, but in these cases the urine contained some of the infectious material. In every case of scarlet fever isolation should be kept up so long as there is any symptoms of the disease remaining. I have had a case set up by contact with a child whose only remaining sympton was a slight discharge from the ear. It is well to remember also that this is one of the diseases in which healthy people may carry the contagiou around with them. Some time ago in Bavaria, there was a collective investigation on this point, and results showed that most of our ideas regarding parents and doctors carrying disease with them were erroneous. Very few diseases are carried in that way, and we will find the contagion more frequently traceable to mild cases that have been overlooked. The period of infectiousness of scarlet fever is so long, and the germ so tenacious of life that it may be conveyed from one place to another for months and possibly even for years upon clothing. It is well then for school teachers to insist upon thorough and repeated disinfection of articles that have been in contact with a case of scarlet fever.

Measles.

This is the most contagious of all the common diseases of childhood. The same islands spoken of furnished on another occasion a similar favorable opportunity for the study of measles. After a long period of freedom from the disease, it was found that 99 per cent. of all people exposed to the disease acquired it. From the standpoint of the school then it is practically certain that infection will always occur after the exposure of a child who has not previously had measles. The incubation period of measles is fully twice as long as that of scarlet fever. Whenever it occurs in a community, the children in the house where it first appears should be isolated from eleven to fourteen days before being permitted to communicate with others. Few signs of measles appear before the end of the first week, and they are not safe to their fellows until two and a half weeks have elapsed, after which time they may mingle with their fellows, provided they have not been allowed to associate with the infected child of the household. One of the most common and by all means the most dreaded complication of measles is a certain form of pneumonia, which appears to have some element of infectiousness peculiar to itself. There seems to be a class of cases where the brunt of the disease falls upon the air passages, and where the infection is particularly apt to affect the air passages of other children, so that in the best conducted children's hospitals a distinction is made in the treatment between those cases of measles attended by pneumonia, and those that are not so complicated. The moral of this is that if Johnny Smith, eight years of age, had measles six weeks ago and comes to school with symptoms of catarrh, and more or less persistent cough, he must be regarded as a source of danger to those with whom he comes in contact. Generally speaking, measles is not carried by healthy individuals. It is most infectious at the time of eruption, and after that very rapidly becomess less so, so that after four weeks, barring respiratory complications, the child may freely mingle with other children.

Diphtheria.

Our knowledge is more exact and definite concerning diphtheria, than most of the other infectious diseases. It has a very short period of incubation. From two to five days after exposure, the first symptoms will usually show themselves. We have very definite and positive methods, at least in large cities, for the early appreciation of the nature of the affection. It would, however, never be safe to allow a child from an infected household to enter the school until at least one week after the exposure, and then only on condition of its having been in the meantime completely isolated. The period of infectiousness of diphtheria varies considerably. It is well for teachers to note, that one of the most virulent collections of germs that Dr. Park, of New York, ever succeeded in getting, came from the throat of a school boy of that city who was not sick enough to be kept in bed.

The period of infectiousness of diphtheria cannot be said to have passed until at least three weeks after the entire disappearance of membrane from the throat, and it can only then be said to have passed when an examination of the throat shows the absence of the peculiar organism. To give an example, I saw last January, in a family of five children, three of whom had diphtheria, a girl eleven years of age who was extremely anxious to go to school. She maintained within her throat the virulent germs of diphtheria for 46 days after the disappearance of the membrane which had lasted only forty eight hours. There was a case that in the absence of other cases in the household would have had no physician and no biological examination, and would have gone to school to infect dozens and dozens of her school mates.

Whooping Cough.

There are many errors prevalent in regard to this disease, and the most dangerous of them is the belief that it is a comparatively trivial affection. Between 1880 and 1890 it killed more people in Ireland than did typhoid fever. It is particularly fatal to very young children. The period of incubation is about the same as that of measles, varying from ten to fourteen days; the period having been settled with difficulty on account of the slow way in which the disease comes on. In any community where exposure is known to have occurred efforts should be made to isolate the children for three weeks.

The period of infectiousness of whooping cough is very long. It is most infectious in the stage preceding the characteristic whoop, so that a case is most dangerous to other persons during the early part of the disease, when no one is likely to know what is the matter. In the whooping stage the infectiousness seems to be less, and it steadily diminishes for a long time. One cannot say when whooping cough ceases to be communicable, but repeated colds appear to prolong the period of infectiousness.

No very positive rule can therefore be given for the guidance of teachers. If a child, said to have recovered, shows persistent cough after return to school, the teacher will perhaps do well to return such a child to the doctor for re-examination. Since we do not know the organism of whooping cough, the doctor may not be able to determine when the infectiousness has ceased, but it will be prudent for the teacher to hand back to the doctor part of the responsibility in such a case.

Chicken Pox.

This is the most trivial of the infectious diseases, and is the only one that occurs to nearly all of us. The period of incubation varies from twelve to sixteen days, but the period of infectiousness lasts as long as there are scabs scattered over the body, in other words about three weeks.

Mumps.

This is the least contagious of all the infectious diseases of childhood, and the number of those who enjoy natural immunity is very large. Only about 20 per cent. of those exposed will acquire the disease. The period of incubation varies from fifteen to twenty days. Isolation should be maintained for three weeks. The period of infectiousness will last as long as the disease itself or any of its complications persist. I should say that for the sake of protection no child who has been exposed should be allowed to return to the school within four weeks from the onset of the attack.

Dr. Gichner: It seems to me that the very simplest and easiest way to reach those interested in school children would be through the medium of the public press. If the county, town or district papers should often contain a few paragraphs written by some prominent individuals in the vicinity, it would attract the attention of the interested parties, and would so guide the public in general as to what is necessary, that there would soon be less need for agitation of such questions. For instance, the publicity which has been given to this fear of an epidemic coming from the south has had a good effect in that it has made many of them ask for vaccination.

Mr. Hartshorne: There was one point touched upon by Dr. Mitchell in relation to scarlet fever which struck me forcibly, that was the danger from the mild cases. I know of a case of that kind which occurred in our neighborhood. The child was in Washington city, and became sick, having a chill and possibly some little fever, but the parents did not know there was anything serious the matter with the child. She was brought home, and in a few days the skin began to peel off. In a short time the rest of the children had scarlet fever. Here was a case in which it would never have been known that the first child had the disease, but for the consequences to others. Another point is the long persistence of infectiousness in certain cases. I think that is a very important thing for us to notice, because it is not generally understood outside the medical profession that there is any danger after disquamation has occurred. If that is correct, care should be exerted in all cases, especially in country districts.

I remember a case of diphtheria also which had pursued a mild course, and the young man having apparently recovered, came down from Frederick county to rest at home with some of his relatives. As a consequence of that visit, there are in one of the graveyards in our vicinity four or five graves of grown people; almost a whole family destroyed by a supposed recovered mild case.

Dr. Fulton: The paper of Dr. Stabler is a very useful and timely one, especially for the reason that there is practically no literature upon the subject of ventilation for small schoolhouses. Architects seem to have devoted their whole attention to large houses and public buildings. The small schoolhouse has to depend upon that sort of ventilation which comes through a floor made of ill-matched or unmatched lumber.

The medical inspection of schools has been very slightly discussed. It is a very important subject and there is one point concerning it that is likely to be overlooked. I mean the advantage that children who are under suspicion derive from the inspection of the schools. The teacher looks over the pupils and separates all that seem to her to be sick. At the visit of the medical inspector about 6 per cent. of them are found to have some infectious disease. What a great advantage it is to the remaining 94 per cent. to be relieved of the suspicion that they may not safely associate with other pupils in the school. Under the plan of leaving such questions to the teacher or parent, a great many children who should not go to school are allowed to go, and it may happen in times of fear that a great many would be excluded who had a perfect right to attend.

I went into one of the counties last year to investigate an epidemic of diphtheria, and was surprised to find the school teacher living in a house with two cases of diphtheria. The community had received no intimation from the physician or anyone else that diphtheria is a very infectious disorder, and they simply took their chances. The entire epidemic grew out of one funeral, and it is worth speaking of. The ignorant undertaker held the funeral of a diphtheria patient at the church, and after the services, including a sermon in the church, the friends were asked if they would like to see the remains. The undertaker unfastened the coffin, but most of the details you will allow me to omit. The body was surrounded by cotton to absorb the discharges that come from such a case. He removed the cotton from the mouth and nose, and to illustrate his great sanitary knowledge he said "I chucked it as far as I could to leeward." He wiped his hands, took a chew of tobacco, and then allowed everybody to come up and look at the remains. He went home, took off his coat and hung it up in the house. He had four children and a wife at home. There was soon an outbreak of diphtheria in that house. Ten people were infected and one-half of them were buried. When I visited the place his coat was hanging on the outside of the house, and he said to me, "Nobody can ever make me believe that there was any diphtheria in that coat." That is one sort of ignorance that one has to contend with.

Dr. Mitchell's topic, the periods of incubation and of infectiousness, is certainly a very important one, and the treatment it has received this afternoon is such that I hope Dr. Reik has very correct notes of Dr. Mitchell's paper. It should make very agreeable reading for all the school teachers in the State, and I hope, with the permission of the State Board of Health, to circulate it among them.

Dr. G. Lane Taneyhill: There is one disease which Dr. Mitchell did not mention, and which I regard as very infectious, that is tuberculosis. I think some of our teachers and some of the pupils are the means today of spreading that disease. That is an acknowledgment which I make as a school commissioner of this city, having experience also as a practitioner. This is the conclusion at which the committee on health of the school board has arrived, and we have endeavored, or at least begun to prevent such infection. We have passed an order that anyone who applies for the position of teacher shall first be examined by a reputable physician, and must obtain from him a certificate of freedom from tubercolosis or other disease that might affect the pupils. You can not do that with many of the children, and it must be admitted that in a city like this, with 66,000 school children and 1,700 teachers, that we will have some cases of pulmonary disease that may affect the others. We are making a number of improvements in the schools, but as you know, we have some buildings which can only be purified by burning them. We have some buildings, in the annex especially, that are a disgrace to the community. We have established the rule by which books that have been handled by any children coming from an infected household shall be disinfected. This has only been in existence about three months, but we can already see beneficial results. There are still many other things to be done to relieve the crowded condition of the schools, the crowding of all their cloaks and garments together in a small room, &c., and if anyone can formulate any plans to correct these abuses, I should be glad to submit them to the school board.

Dr. Mitchell: There is one point not yet mentioned which seems to me of considerable practical value, namely, the economic view of this question. The way to reach a municipality most forcibly is to establish the matter of economy, and I believe that, just as we were told in a most striking way a short time ago the tremendous cost in dollars and cents caused by typhoid fever, if we could prepare a table showing the value of medical inspection in Boston and New York, the municipal authorities would quickly act in the matter. If they had it impressed upon them how each member of the community would be affected by the gradual stamping out of the infectious diseases as a result of the medical inspection of the schools they would soon come to the view that it is a cheap investment. I am sure such a table would be of valuable assistance to us.

DR. FULTON: I wish to introduce the following resolutions:

RESOLVED, That the Maryland Public Health Association recognizes the timeliness of the questions presented by the United Women of Maryland for discussion at this meeting, and proposes with the co-operation of the United Women of Maryland to seek the following sanitary reforms in the management of infectious diseases:

1st. The establishment of a municipal hospital especially designed for the care of infectious diseases.

2d. The daily inspection of schools by competent physicians, under the direction and control of the City Health Department.

The resolutions were seconded by Dr. Reik and adopted by a vote of the society.

EVENING SESSION.

WEDNESDAY, MAY 11th.

The meeting was held in Levering Hall, Johns Hopkins University, and the President, Dr. W. H. Welch, in calling the meeting to order, said:

We are singularly fortunate in being able to present so attractive a programme for the health association this evening. I will take this occasion to say just one word as to the purpose of our organization.

This health association was started last spring, and this is the first annual meeting since it was definitely organized. Its aim is to interest and educate the general public in matters relating to public sanitation, and the desire is to secure as large a membership as possible, so that the organization may be a representative one and become a power in securing proper sanitary measures in this State. It is desired to have among our members not only medical men and sanitary experts, but also men and women interested in bringing about the desired result: the advancement of public health in this State and city.

It is hardly necessary to introduce the speaker of the evening. He has already appeared before Baltimore audiences on two occasions—once before the Medical and Chirurgical Faculty, and again more recently at the meeting of the Municipal League of this city. He has long been very well known to professional men through his admirable work along sanitary lines, and has now become very much more widely known to the general public by the administration of a department of the city government in New York, where he has made a record that marks an era in political reform, in good government, and in the advancement of sanitary interests.

I have great pleasure in introducing Col. Waring, who will speak on the sanitary treatment of water-borne waste in town and country, a subject upon which he speaks with great authority.

The Sanitary Treatment of Water-Borne Wastes in Town and Country.

It is a firm conviction of the well to do dweller of the town that the health of his family demands that they should live in the country for some months of each year. If he is sufficiently well to do, he maintains a country house of his own. However plain and modest this may be, he lays especial stress on its sanitary appliances. On this part of the work the expenditure is generally liberal, and the best modern plumbing is provided. Baths, wash-bowls and closets are uninclosed, and are set in tiles or in marble; all piping is in full view, and the whole work is suggestive of purity and entire safety. So far as the fittings in the house are concerned, nothing could be better.

While the best achievements of modern sanitary science are adopted in their perfection inside of the house, they are often utterly disregarded beyond its walls. To use the expression of a president of an architectural society of Scotland, the outflow of the drains goes "the devil knows where," and, verily, the devil must have invented the pit to which it does go. Availing himself of the "out of sight, out of mind," heedlessness of human tendency, he has managed to maintain to this late day, close to the home of nearly every family in the country, the worst accessory of human habitations that the devil ever led man to make.

The fundamental principle of the safe riddance of the wastes of human life is the avoidance of dangerous and offensive putrefaction. Save for the specific germs of disease, which call for special treatment, but which do not occur in the absence of disease, there is nothing in the contents of the water flowing from the drain of a house properly constructed as to its drainage that is either offensive or dangerous, as first discharged. It is simply water carrying organic offscourings in solution or suspension. This organic matter is on its way to the complete decomposition that is to fit it for the renewed service of organic life. If Nature has its unrestricted way, it will pass through its changes without assuming at any time a condition to be feared or to be noticed.

Nature *has* its unrestricted way, when the liquid is thrown broadcast over the surface of the ground and is left exposed to the action of the air and of the living agents of oxidation. The same is true when the liquid is deposited in the interstices of the soil, near the surface. With one or other of these methods the transition from waste material to plant food is rapid, complete, and innocuous. While in our imperfect knowledge as to disease germs it is wiser to apply special means to their destruction, there is much reason to think that even these may be involved in the oxidation, and completely destroyed.

When foul liquid is thrown on to the surface of the ground, it sinks into it and deposits on the surfaces of its particles the organic impurities which it contains. Its water, descending still farther, has become essentially purified. As the water sinks away, air enters to take its place, and every particle of soil that is coated with waste matters is surrounded with air rich with oxygen.

The aerated upper layers of the soil are a universal destroyer of whatever organic impurities may be deposited on or near the surface. Dead organic matter is completely destroyed by natural processes wherever it is exposed directly or indirectly to the action of the atmosphere in the soil. Aeration is a necessary condition of the process. Continuous saturation must be avoided. The delivery of sewage on to the ground must be intermittent, allowing the soil to purify one application before another is given.

This is radically different from discharge into a cesspool, where accumulation and saturation take place at considerable distance from the surface, the interstices of the soil are continually clogged, air is excluded, purification cannot be effected, and offensive putrefaction sets in.

When the sewage of the house is discharged into a cesspool, or even into an open pit, the natural and beneficent process of oxidation and nitrification is impossible, and a foul and dangerous putrefaction is set up, most offensive gases are exhaled and the development of poisonous conditions is active. The nearly universal cesspool, with its foul emanations, and with its ready contamination of the water of wells and cisterns, is the greatest drawback of country and village life. Its complete abolition is the most imperative demand of sanitary reform. So long as real knowledge on sanitary matters did not exist, any device that would get the foul off-scourings of a house out of sight (and out of smell) was naturally thought to suffice for all requirements. A properly arranged cesspool accomplished these purposes. As a result, the cesspool has become practically universal for all houses beyond the reach of sewers. A habit once formed is exceedingly tenacious.

It is fully fifty years since the late Edwin Chadwick, in England, called public attention to the danger of subterranean accumulations of putrid organic matter. From that time to this and in an increasing degree, sanitary writers have insisted on the fundamental importance of obviating such seats of putrefaction. These dangers are now perfectly understood:

1. The constant delivery of liquid filth into the soil, at a depth far beyond the reach of atmospheric action and oxidation, leads to the pollution of wells and often of the cellars of adjacent houses. It leads also under frequent conditions to the fouling of subterranean water courses to such a degree as to produce a marked effect on water supplies taken from streams flowing past cesspool towns..

2. The unventilated chamber, filled with filth, is practically a gasometer producing exhalations of the most offensive character, which have a tendency to find their way back, through drain pipes and defective traps, into the house furnishing the filth.

3. Microscopic organisms, known under the general designation of disease germs, emanating from the bodies of those sick with typhoid fever, cholera, and other diarrheal diseases, all of which might be destroyed by natural process under a proper method of disposal, find in the foul liquid of the cesspool favorable conditions for multiplication, thus converting an accumulation, which in the absence of such germs might be only a nuisance, into a hotbead of disease.

Even where the drinking water of a country house is taken from a source that is clearly beyond the reach of contamination, the filthy conditions attending the use of a cesspool should by all means be avoided. Where water is taken from a well on the premises, or where it is taken from a cistern lying at such a level as to be reached by the leachings of a cesspool—for cisterns are rarely tight—there the danger is direct and immediate.

We have now reached a point where men of intelligence realize the importance of guarding their own country houses against at least the worst of cesspool evils, but the vast contingent who send their families for the summer months to farm houses and improperly guarded country hotels seems to be, as a rule, heedless of these evils. A pleasant situation, agreeable surroundings, a good table and good beds will tempt the average father and mother to disregard what they may consider an ultrarefinement of the health question, and they pass the most depressing months of the year subject to influences which even the active out-of-door life of the summer vacation is too often powerless to counteract. Thus, women and children who ought to return from their outing filled with blooming health and vigor, do in fact often return languishing, if not actually stricken with disease. In a great majority of such cases, a careful sanitary investigation of the conditions attending their summer life would show that they had fallen victims to the foul vaults and equally foul and still more dangerous cesspools to whose influence they had been unconsciously subjected. A city family, especially with young children, would be safer if they passed the summer months in an average town house, taking an occasional day at the seaside, than if they availed themselves of the great attractions and benefits of real country life in a farm house or hotel of which the drainage is run into a cesspool, and of which the drinking water is taken from a well or second rate cistern subject to underground flow from a barn yard, a vault or cesspool.

The wastes of all habitations which require special treatment are those organic substances which are removed, or are capable of being removed, in the liquid outflow of the house. Some of them have and some of them have not been subjected to the processes of digestion and rejection. So far as their ultimate disposal is concerned, it is immaterial whether they have or have not undergone these processes—save in the somewhat rare cases where, in their passage through the body, they have become impregnated with special microbes, due to, and capable of communicating, intestinal and other diseases, such as typhoid fever and cholera. But for this occasional infection, the wastes of the water-closet and the wastes of the kitchen sink are not essentially different after putrefaction. They cannot be distinguished from each other, save by tests for "disease germs." If the kitchen waste in the cesspool becomes, as it often does, infected by typhoid dejecta, it offers the same pabulum for the growth of the infection that the accumulation in a wet vault does.

The only proper disposal of sewage that is possible under our present knowledge is to bring all of its organic contents into close contact with atmospheric air, under conditions suitable for bacterial oxidation. Let us for a moment consider the general question of bacteria.

In 1892 an enthusiastic sanitarian, urging the people to make their foul places clean in preparation for the dreaded pestilence, is said to have exclaimed : "The cholera germ is already thundering at the gates of New York!" I have, myself, had frequent occasion to hear educated physicians assert that all streets should be asphalted because the germs of disease infest the crevices between paving.stones, and proceed thence on their fatal mission among the people. To the lay mind, all bacteria are pernicious, all microscopic life is pathogenic, and the salvation of the race is to be sought in disinfection.

All this is fallacy. Bacterial activity is the mainspring of organic life; the pathogenic organisms are very subordinate to those which protect us from them, and, under ordinary conditions, disinfection should be avoided as a clog in the wheels of nature's most beneficent processes. The visible and obvious facts of life, disease and death, and the deductions drawn from these and formulated, before the microscope and the studies of bacteriologists had opened the modern road to knowledge, led to the erroneous professional and popular ideas whose influence is still so widespread and controlling. Although we are now, in a certain sense, only at the threshold of real knowledge, we are able to assert some things with confidence and we are justified in assuming certain general principles which have a direct bearing on the relation of the human body to its surroundings.

We know that certain diseases are communicated by certain particulate living organisms, and that certain conditions favor the pernicious activity of these, while other conditions interfere with or prevent their activity. Probably the most important controlling condition is to be sought in the vital vigor or lack of vigor of the individual.

A sound man, full of vitality, well fed, well worked, but not overworked, and with an elastic step and spirit, is generally safe in the presence of most infections; while a listless, lethargic, dyspeptic and spiritless man may fall an easy prey to any infection to which he is subjected. It is reasonable, therefore, to suppose that hygiene is often more important than sanitation—save that unsanitary surroundings may have a marked tendency to undermine our powers of resistance and to counteract the effect of individual healthy tendencies. As we study the phenomena on which our conclusions in these matters are based, we find that the most important factors of health and disease, when men are living in communities, are allied with the changes that take place in their organic wastes, and with the relations that these changes bear to the environment of their lives.

I am not a bacteriologist, nor have I been able to keep pace even in a general way with the rapid developments of the new science. It is to be understood, therefore, that what I say on this subject is said only as an expression of the general conclusions which sanitarians have formed as to the leading principles that bacteriological study seems to have developed. I think it may be assumed that the conclusions are substantially sound.

Living organisms, whether animal or vegetable, are but a temporary form and expression of constantly moving matter. The organic world is in a state of flux and of almost ceaseless activity. The elements are forming, unforming and reforming themselves into various shapes and conditions. They may be temporarily arrested and stored, as in vegetable matter; they may be slowly changing, as in the bony structure; or they may be undergoing constant transmutation, as in the blood and softer tissues. They are held in these various forms by the mysterious and controlling power of life. When this power is withdrawn, their tendency to return to the elemental state, ready for renewed use, has its sway, and dissolution proceeds, rapidly or slowly according to the character of the substance and according to circumstances, but it is always inevitable.

The continuance of organic life on the earth depends on such transformation, and the natural forces of life, death and decay hold their universal dominion. While decay may be delayed, as by disinfection, by embalming, or by dessication, it is only a question of time and condition when its activity shall be renewed. We have, therefore, to assume that in the economy of the universe, death and destruction are as important as birth and growth.

Save as an effect of actual active combustion, all resolution of organic matter into its elements, and all progress of organic matter toward complete resolution, is the work of minute organisms which are known under the general name *Bacteria.* For example, the organic contents of a pailful of liquid wastes, properly exposed to the air, require the action of at least three classes of bacteria.

First. Those which attack the carbonaceous compounds and break down the structure, forming carbonic acid and ammonia.

Second. Those which convert the ammonia into nitrous acid.

Third. Those which convert nitrous into nitric acid.

This is recognized as the regular order under the most favorable conditions—as to complete aeration, suitable temperature, and, for the nitrifying process, the absence of light. The completion of the nitrifying process marks complete conversion to the best form of plant food. Whatever interferes with this simple and direct process leads to a complication of method and a delay of result.

In other words, so far as is now known, all forms of organic decomposition from the first fermentative softening of the less stable carbo-hydrates to the final nitrification and ultimate chemical change of the ammonia compounds into which the albuminoid matters are first resolved, are effected through the agency of different living organisms. These act independently or in association, and produce the most various results, according to the circumstances and environment under which they are developed and exist.

For example, if, instead of a proper exposure of the organic matter in our pail of waste liquid, as by spreading it over a grass plat, its only access to air is by the contact between the surface of the liquid and the atmosphere, most of the oxygen required for the first breaking down of the organic form will be taken from within the material itself, the form of decomposition will be changed, intermediate compounds, always offensive and probably often infectious, will be formed, and the whole process will be thrown out of joint.

In this brief, and by no means scientifically explicit description, we have the two widely divergent types of sewage disposal which may result in healthful or unhealthful conditions, and it is in the light of the facts here indicated that the proper disposal of sewage must be carried on.

There can be no proper disposal that does not secure rapid resolution into elements. In fact, no other result is admissible from the point of view of the sanitarian. Disinfection, as by the use of chlorides and of other germicide methods, simply arrests the necessary process, with a certainty that whenever and whereever the power of the germicide shall cease, whether from dilution in a stream of water, from evaporation, or from whatever cause, the processes of decomposition or putrefaction must inevitably begin. This potent energy for reclaiming to its further use all organic matter that has become useless, pervades all nature and is carried on under all conditions which permit the development of destructive bacteria, of one character or another.

The prevailing methods of sewage disposal may be divided into two distinct classes—one proper, the other improper. Concerning the latter, we have only condemnation to offer ; concerning the former, the essential condition is covered in the statement already made, that all proper disposal of sewage is affected, and is affected only, by exposure to air. This seems a simple rule, but it is an imperious one, and it must be obeyed to the letter. A bit of meat not larger than an egg is not exposed to the air, though it lie on the surface of the ground. Only its surfaces are so exposed, and under suitable conditions the interior of its substance will undergo a putrefactive decomposition before the destruction of the exterior portions shall have laid it bare to the air. A bowl of urine, exposed at its surface, rapidly becomes putrid because its lower portions must undergo changes involving the life of organisms not needing air for their growth.

In practice, of course, the amount of putrefaction taking place in small particles of matter is of no consequence, but the principle here indicated controls the manner of decomposition in the case of larger masses. The only effective method is to disseminate the organic matter that the sewage contains in such a way as to expose it completely to the oxygen of the atmosphere, to the oxygen contained in the surface of the soil, or to the oxygen dissolved in a body of water, and in each case the limitation must be observed, that the water must not receive a larger volume of sewage than its dissolved oxygen is capable of taking care of, and that the soil must not remain saturated after it has received enough sewage to use up its air. In the case of direct surface exposure to the atmosphere the only limit would be the accumulation of so much material as to prevent the free oxidation of its lower layers, and this rarely occurs in practice, with proper intermission of application.

Under the conditions set forth, no matter how secured, we are not only sure of an inoffensive, complete and permenently reliable destruction of waste matters, but we are, in all probability, perfectly secured against the development, or even the continued existence, of those other minute organisms which are popularly known as disease germs.

I was shown, years ago, in the laboratory of the Surgeon-General's office at Washington, an experiment with the culture of various specific germs on gelatine plates, by what a farmer would call "drill cultivation." The germs to be observed were taken up by a needle point with which lines were drawn across the gelatine. The subsequent development of these germs was as easily traced across the plate among the mass of adventitious growth sown from the atmosphere, as are the rows of sprouting corn among the young grass and weeds of the field. But without protection from the floating matter in the air, it would not be long before the same organisms which are active in the destruction of the organic parts of sewage, would give a foothold, and then all minor and feebler growths would be swept out of existence and apparently consumed.

It is not known how far it is safe to trust to this action, but the fact that on the great irrigation fields of the Berlin sewage farms, and under the concentrated application of the sewage of Paris at Gennevilliers, and over the hundreds of sewage farms in England, not a single case of typhoid fever, or cholera, or other disease of allied character, has ever broken out among the people living and working on those fields, makes it practically clear that wherever free exposure to the atmosphere is given, there, if disease germs exist at all, they meet an early death. It is also safe to say that in the accumulated horse droppings and street dirt filling the crevices of Belgian block pavement no disease germ would stand a ghost of a chance in the presence of the more vigorous organisms which this material would be feeding.

Nothing else in connection with sanitary matters now so exercises the public mind as the pollution of streams with sewage. Legislatures and courts will soon be on a hot chase after houses, villages and towns which are fouling water courses with sewage. Various schemes are being devised and experimented with, having for their object the purification of sewage before it escapes into the river. Several inland towns in Connecticut, shying at the unknown terrors of sewage farming, or intermittent filtration, are considering the construction of huge sewers which shall deliver their whole outflow along the Connecticut shore of Long Island Sound; whence there will come a local outcry of which an abundant crop of injunctions is the predestined result. It is perfectly safe to say that there is no reliable refuge for these towns other than that which I have indicated, viz.: the complete exposure to air of the organic matter of their sewage, under proper conditions. This is nature's remedy and nature's only remedy. Chemical precipitation processes, calculated to withdraw the obvious solids from sewage, leaving its more putrescible dissolved matters to flow on and foul the river, will continue to meet as certain defeat as they have already met in the attempt of the City of Worcester to prevent the pollution of the Blackstone river. Chemical precipitation implies a certain amount of disinfection, or antiseptic action, which allows the effluent to pass perhaps a little farther on before its putrefaction begins, but the end, sooner or later, is sure to be as fatal as it has been in the case of Millbury, which is only five miles below the outlet of the Worcester sewer, and where the water of the Blackstone is intolerably foul, in spite of the removal of the "sludge" at a cost of over $30,000 per annum. Indeed, the conditions now observable in this case make one wonder if it would not be better to reverse the operation—allowing the more inert visible solids to pass into the river, and to withhold the putrescible matters in solution.

Wherever the volume of the river is not so great as to insure by dilution a permanent sufficient supply of dissolved oxygen in the stream, there the organic matter of sewage must be withheld. It can be properly withheld, so far as the world now knows, only by some method covered by the general designation: "Soil Treatment." We hear a good deal about surface irrigation and intermittent downward filtration, as though they were different processes. They are different only in degree, not at all in kind. The process in each case consists in the distribution of the organic matter over the surfaces of the particles of the upper and aerated soil, and to a greater or less depth according to the intensity of the application, and the subsequent exposure of that organic matter to the renewed air in the soil.

There can be no proper disposal of the sewage of any house in which human beings live short of the absolute abandonment of the privy and cesspool, and the purification of all these wastes by soil treatment.

It seems incredible that such a large proportion of intelligent persons still fancy that these evils are unavoidable. It is not much more than thirty years since their removal was first undertaken in a practical way by the Rev. Henry Moule, Vicar of Fordington, the inventor of the earth closet. Acting on what was then the universal belief that fœcal matter was as much more dangerous than the others, as it was more offensive, he devised a mechanism for burying this material in dry earth, learning by practice the effect, but not suspecting the cause, of the immunity thus secured; the cause being the action of destructive bacteria acting within the mass by the aid of the air, which dryness and porosity admitted.

Finding it impossible to make a proper disposal of kitchen and laundry wastes by the earth closet, he laid, a little below the surface, and along the roots of a row of grapevines, an open-jointed tile drain, into which these liquids were discharged. They leaked out into the soil and were, as he supposed, taken up by the grapevines. There was then no knowledge to show that they were first reduced to the condition of plant food by the ærobic bacteria of the surface soil. Mr. Rogers Field, a distinguished engineer of London, amended this process and made it practicable by adding to its appliances a reservoir for the retention of the outflow from the house until it should amount to enough to flow through and fill the whole drain, or series of drains, thus securing an intermittent discharge. He applied this system to the disposal of the sewage of a small village in England.

Being informed of these methods, in 1868 I introduced them in connection with my own house at Newport. It is not worth while to go into an account of the progressive improvements that followed this first simple application of the process, further than to say that, with a very wide extension of the system, until three or four years ago, it was the almost universal custom to deliver the outflow of the reservoir (flush tank) into open-jointed drains, laid not more than eight or ten inches below the surface of the ground. Since that time, there has been a constantly increasing tendency to discharge the sewage directly on to the surfare without the use of the tile drains. This may be said to be now the favorite practice, except where the disposal area is very close to the house, or is exposed to the sight of passersby. Too close proximity is objectionable only for purely sentimental reasons, and the question of exposure to sight is important only because people smell so much more with their eyes than they do with their noses. We are now constantly constructing surface disposal works on pasture fields at small country places, and even on the rear lawns of town lots, and I predict that before the end of the century the use of the underground tiles will have become very exceptional.

Briefly described, the process in its present development is this: All of the water-borne wastes of the house—and a water closet may be used without other water supply than may easily be furnished by hand pumping—are delivered into a reservoir open at the surface, and built, preferably, of white glazed bricks. This is provided with a wire screening basket to hold back rags, etc., and with an automatic siphon discharging its contents immediately on its becoming filled to the overflow point. These contents flow on with a rush to what is called a gate chamber, a device for turning the flow to either one of three different outlets at will. These three outlets deliver over the surface of three small tracts of grass or garden land. The outlets are marked "Monday," "Wednesday," "Friday," and it must be the duty of some person to change the gates on those days, so that each tract shall have its two or three days of use in each week, and its four or five days of rest for aeration and refreshment. The screening basket should be cleaned out on the same days, and the walls of the basin washed down with a broom.

With an ordinary country seat, under ordinary conditions, the total cost of the work is about $300. As is well known, land receiving sewage in this intermittent way, instead of becoming worn out, grows more and more effective as a means for purification. It is not to be said, of course, that this process is anything like complete. The inventive American will be quite likely to improve it greatly, but, as it exists, it is absolutely perfect as a sanitary device; it is free from all objection as to convenience and esthetically.

It will, of course, strike the average *practical* man as "troublesome." He has so long been accustomed to the out-of-sight-out-of-mind process of direct delivery to a hidden hole in the ground, that he is inclined to find a bugbear in the fact that thrice a week some one must spend ten minutes in changing the location of a gate and tidying up the tank. Such objection, carried to its ultimate result, would be equally applicable to the sweeping of houses, the washing of clothing, and the bathing of the person. This very limited amount of vigilance is the necessary price of the liberty to live protected against nuisance and danger. It is in this case the price to be paid for taking the long journey from barbarism to civilization, and giving to every isolated house in the country the unspeakable benefit of a proper method of sewage disposal.

Now about the disposal of the sewage of towns. About 1890 the Massachusetts Board of Health tried a very curious and instructive experiment. They took a box filled with small pebbles ranging in size from that of a hickory nut to that of a pigeon's egg, which had been washed free of all extraneous matter. A small amount of liquid would run through perforations in the box on to this material, pass slowly through to the bottom, which was 6 feet in depth, and after that process had gone on for awhile the foulness of the sewage began to disappear, and after about three weeks bacteriological and chemical tests showed that what had gone in at the top as foul sewage had come out as pure water, purer than the drinking water supplied to any house or any town in the State. What had taken place here was that this material had been constantly exposed to the atmosphere. That is the rationale of every system of sewage disposal, whether it be called irrigation or intermittent filtration through sand. If sewage is spread over a field for a day and then turned on to another track and no more put upon the first field until one or two days have elapsed, all the obnoxious matter carried by the sewage and caught by the soil will be destroyed in the same manner.

I have given my attention to this subject for a long time as a matter of professional work, and I want now to describe an apparatus that is pictured here on a chart behind me. It is necessary to say that in doing this I am to some extent sounding my own trumpet, and I want to assure you I that have no ulterior motive, but merely show it to illustrate the process that was so clearly demonstrated by the Massachusetts Board of Health. This apparatus is in use now at Willow Grove Park, Philadelphia. A year ago last March that association was served with an injunction because its water emptied into the boating lake of a rival park. They were given only three months to make the necessary changes. There was no other land that could be reached except by expensive operations, and the only thing they had time to do was to build this small, simple apparatus.

The original experiments were made in 1894 at Newport, and we used the same filter for five months. When the works were taken down it was found impossible to detect any difference in that gravel from some of the original which had been lying in the yard all the time. It takes about 40 minutes for the water to pass through the filter, and it comes out pure. To illustrate what I mean by that I will say that I have drunk the water as it comes from the filter, and so have others.

This serves to show what progress has taken place in this line. The English rule has been that in irrigation there should be an acre of ground for every hundred of population. This filter will do the work at the rate of about one acre for five thousand, and perhaps in time we shall have an establishment with such power that we can take care of the population of Baltimore upon one or two acres.

Dr. W. H. Welch: I am sure I express the sentiments of all those present this evening in extending to Col. Waring our very hearty thanks for his extremely instructive and valuable address to us. We appreciate his great kindness in coming here, and this is a lesson in public hygiene which will be, I am sure, of great value to us.

Adjournment.

MORNING SESSION.

Thursday, May 12th.

Report on Present Status of Physical Training and Hygiene in the Schools of Maryland.

Dr. Edward M. Schaeffer—*Representing the Physical Education Society of Baltimore.*

Strange delusion—and how frequently it still prevails!—that the minds of the pupils are seated at the desks and their bodies hanging on the peg with their wraps, waiting to convey the daily store of knowledge home! True, recesses are occasionally given, and a pickle and pie luncheon allowed the tired body, but the feelings of the hungry brain cells may be imagined when this acidulated extract is served as a nutritive by the blood current, to say nothing of disturbing sensations in the middle parts, where the lesser brain presides.

Let us first define "the whole man," and then see if we can find a specimen, the educated outgrowth, in some sense, of the whole boy whom we sent to school.

"As is well known, the words *health*, *whole*, *holy* are from the same stock, and they indicate to us the fact that far back in the past those who created this group of words had a conception of the meaning of health very different from ours and which they embodied unconsciously in the word itself and its strange relatives."

"Heal, hallow, hale, holy, whole, wholesome" are all akin. To inhale and exhale is to keep the body "whole" (hale and hearty), although breathing is a lost art among a housed and fashion-bound race. Spirit and soul are synonymous, etymologically, with "breath" itself, and even "salvation" comes as a physical expression of the wholeness, wholesomeness, holiness of the body and its higher aspirations. The religion of the body is as sacred and authoritative as that of the soul.

We can never get away from the self-evident fact that this world is not ready for bodiless spirits. Although mind is king, matter is the vehicle and instrument of mind, and must be cared for and trained co ordinately in order to give to the former healthy, natural and effective expression.

It has been pointed out that there is the same difference between physical health and physical education as between mental health and mental education. It is a difference of training and developed power.

What is the aim of physical education and what does it signify?

Physical education has no necessary connection either with indoor drills and apparatus or with outdoor acrobatics. It is neither rythmical calisthenics nor pugilistic athletics.

It is a logical and scientific provision for the common and inseparable needs of the body-mind and the mind-body. It wishes "to make the most of the body for human purposes," as Dr. W. T. Harris has expressed it, and to fulfill its divinely-appointed part in developing a well rounded symmetry of the moral, intellectual and physical nature.

An education which ignores the physical basis of life "manufactures cripples," as Plato said in his day, and handicaps the child in each and every department of his being. This is no sweeping statement born of a special enthusiasm; it is the judgment of the foremost educators of our time, and is the watchword and inspiration of all workers in modern psychology and pedagogy.

The object of education is to develop character, to educe faculty, to train for usefulness in the home circle and in the conduct of public affairs—to make good wives and mothers and good citizens, to train the mind to apply itself to the essentials of things and to make the body subservient to the will. The training of the will is the ultimate end of all education."

President Eliot, of Harvard, thinks that trained faculties and not information or learning is the prime object of education. "To be able to do for one's self, to apply theory, to use trained faculties for tangible, practical results is the issue." Dr. Clarke, in "Building of a Brain," remarks: "Education and study are apt to be confounded as synonymous, whereas study or literary culture is only one part of education. An educated person is something more, and much more, than a college graduate. The word is not used in the narrow sense of book learning or of school training, but in its proper philosophical and physiological signification of all that training, alike of the brain and of the body, which yields the just and harmonious development of every organ." Dr. Clarke uses the simile of a prosperous merchant, "growing out of his business by becoming acquainted with and supervising every detail of it; so the brain, the great central office, grows by taking part in and supervising the growth and function of every organ. If a single organ is wanting, or a single function not performed, just so much less brain development results."

Another writer says: "Education has reference to THE WHOLE MAN—body, mind and heart. The being in whom you find this union is the only one worthy to be called educated."

Present Status of Physical Training and Hygiene in the Schools of Maryland.

In looking the field over an agreeable surprise awaited your reporter in the quality and applications of the work in institutions which had not previously been visited by him.

While Maryland has been very backward in the general recognition accorded this essential branch of education, here and there excellent use is made of physical training in the curriculum. This report is at least valuable in presenting the ideas and aims which pervade this movement as expressed by the educators themselves, at my suggestion. While it is not exhaustive, it is characteristic and fairly represents what is going on within our borders. Two of the best equipped institutions founded for the education of girls do not at present admit the male visitor. This is more a local, conservative, than ethical proscription of the scientific mind.

McDonogh School.

From the beginning of the school in 1873 the boys have been given military drills without arms for twenty minutes each day during the months of spring and autumn. In 1893 a gymnasium was erected, having a floor space of 50x100 feet, and since that time each boy has been required during the winter to devote two periods a week, of twenty minutes each, to the setting-up drill or Swedish gymnastics. At present only the Swedish exercises are employed during the winter. The gymnasium serves as a playroom for the boys and is always at their disposal. No apparatus worthy of mention has ever been in use at McDonogh. An ample playground lies at the door of the gymnasium, and every boy delights in roaming over the farm of 800 acres. Hunting, fishing, trapping, swimming and other outdoor sports or exercises occupy nearly all the leisure time of the boys. The recitations during the school session occupy the time from 8 A. M. to 1 P. M., except for a recess of fifteen minutes for the large boys and thirty minutes for the smaller boys. Nearly all of the boys actively participate in baseball, football or other games during this recess or at some time during the day. Each boy who completes the course of study given at the school will recite daily on the subject of physiology and hygiene during one session of nine months. The number of pupils is 150. They enter the school between the ages of ten and fourteen and leave at sixteen or seventeen. Fifty boys are employed for nine hours a week during the school session and five hours a day during the summer in the carpenter shop. Twenty more are printers and work in like manner as to time. The remainder are busy during two hours each afternoon and three hours Saturday morning at farm work, garden work and other duties too varied to mention in this brief space. Manual training in the broadest sense of the term is an essential feature of McDonogh education. The boys all come from Baltimore city, and must have a doctor's certificate as to generally good physical condition and good sight and hearing. Upon such boys the effect of life at McDonogh is readily noticeable. Plenty of rich blood, strength of muscle and general activity and good health soon result and become a valuable piece of personal property, which the possessor may, with proper care, keep for life.

Baltimore Polytechnic Institute.

The following statement by Mr. John W. Saville, president, given in the '95-'96 report of the Commissioner of Education relative to the *rôle* of manual training, is of interest:

"Manual training is intended merely as a stepping-stone to higher technical study. It does not aim to teach a trade, but does aim to give an insight into many. The central idea of such instruction is to develop all the faculties a youth may possess, whereas in a purely collegiate school we frequently find that there is no association whatever of theory and practice; in a manual training school the two go hand in hand.

"Owing to opposition, the promoters of manual training have not yet met with the success that they feel will one day crown their efforts. I boldly predict, however, that when that day does arrive the superiority of the manual training school boy to the collegiate student can be easily demonstrated. My belief in this prophecy arises from the fact that in this system of instruction may be found the secret of true education; the mind should be stored with ideas instead of words, using the latter only so far as they are needed to convey the necessary ideas to the mind."

Country School for Boys.

Mr. Winsor, principal, writes: "Our object is to give city boys the benefits of open-air life in the afternoons. We make provision for baseball, football, tennis, cricket and handball out of doors, and we serve a hearty midday meal. We go in for games rather than set exercises in the gynasium. The whole school take part—2 to 4 P. M. each afternoon, all of Saturday afternoon, and all of Monday morning. After each recitation period there is a recess of five minutes, and one fifteen-minute recess in the morning. There are some elementary military drills, chiefly for the sake of the discipline.

Maryland School for the Blind.

The skeptic on the educational value of physical training will here receive a powerful enlightenment. Says Mr. F. D. Morrison, the superintendent:

"We can hardly make an estimate of the value of physical training as a school exercise for blind children, for it is the foundation of all that follows. Confidence in motion is imparted. We often find it more difficult to teach a blind child to play than to read.

"The health of blind children averages from 5 to 10 per cent. below that of the sighted. We get improved health and better progress in studies.

"There are two instructors, one female and one male. An eclectic system is used, introduced in 1886, and there is a gymnasium 30x70 feet, furnished with Swedish and German apparatus. One hour is allotted daily to gymnasium, and two hours daily to directed play on an acre of ground. There is ten minutes' recess every hour. Hygiene is taught."

Miss Martien, the instructor, furnishes these additional items: "The boys are soon interested in making muscle, and the girls in acquiring grace and ease of motion. With little children we begin by playing games, imitating the leaping of frogs, flying of birds, etc.; also different trades—sawing as carpenters, shoeing each other for horses, or striking the anvil as blacksmiths. Next, it is always a surprise to find how few can touch correctly the different parts of their bodies as you name them. Then come free movements to teach direction; we clap hands, front, back, overhead, etc., or stamp feet.

A morning visit which I made at this excellent school was most interesting and inspiring. The pathetic side of the exhibit was much relieved by the remarkable results that were in evidence, mentally, physically and psychically, in this restricted class. Nothing except wise physical training could so develop self-confident manhood and womanhood under such a sad and overwhelming handicap.

COLLEGES.

St. John's College, Annapolis.

Introduced in 1890; has physical director and special coacher for baseball, football, boating and tennis. Gymnasium and athletic field. Time allotted, two hours three timee a week during winter months. Military drill under army officers, 135 students in battalion; twenty-five get manual training in machine shop. Hygiene taught indirectly by lectures. About 100 students take systematic physical training.

Washington College, Chestertown.

Rev. C. W. Reid, president. Gymnasium fitted with Sargent's apparatus. Athletic field. Three hours per week allotted to each class. Recess, half-hour, from 11.30 A. M. to 12. Hygiene taught. System introduced in 1892. This college is co-educational, and the gymnasium was presented to it by the townspeople. It was founded in 1872, and possesses a site of rare beauty, and adaptability to healthy outdoor activity. Present number of pupils 110.

Rock Hill College,

founded in 1865, pays especial attention to physical training, and encourages the love of athletic sports in every way. Has large and shaded playground, bathing and skating pond, outdoor gymnasium, bowling alley, etc.

Easton High School.

This ornament to Talbot county, a first-class up-to-date brick building, has in its well-planned school curriculum, since 1887, very intelligent instruction in physical training under Miss Flavia A. Welby.

One hundred and five girls are exercised in the Swedish method, supplemented by movements *a la* Delsarte and Dio Lewis. Time allotted, twenty minutes each day. Aisles used of large assembly hall; no gymnasium or playground. Hygiene is taught.

Manual training is given the boys in a shop fitted out with tools, etc. They receive daily instruction in woodwork.

One hour recess for dinner, 12.30 to 1.30 P. M. I can testify to the accuracy of results claimed: "healthy, well developed, well poised, graceful bodies."

Dumbbells, rings and wands are also employed. The Dio Lewis exercises (with music, dumbbells, etc.) are occasionally used with the children, because prettier and more popular.

State Normal School.

Miss A. M. McLean, the instructor, states that calisthenics have been taught since the foundation of the school in 1865. In 1890 Swedish and Delsarte methods were introduced. There is a good gynasium provided with Swedish apparatus. No playground. Time allotted averages two hours a week for junior and middle classes in an eight-months term. The senior class has a lesson every day from October 1 to April 12, lasting thirty minutes. This department is for the physical and mental good of the pupil, and the training is also to prepare the pupil to teach the subject.

Recess, thirty minutes at noon. School hours, 8.45 A. M. to 2.30 P. M. Number of pupils 400.

The pupils have given up *en masse* the wearing of corsets, and besides these good works write valuable essays on dress and physical training. This marks a new era and emphasizes a most hopeful progress in cultivated tastes as well as consideration for the highest welfare of the future home circle.

Woman's College and Bryn Mawr School.

The best equipped and conducted institutions in Maryland, from the physical educator's point of view, are the Woman's College and Bryn Mawr School. Both have ample funds, and employ medical directors, with graduates of special training schools as gymnasium instructors. Both give each student the benefit of a thorough physical examination by a medical expert. They have first-class gymnasiums, playgrounds, swimming pools, tennis courts, athletic associations, etc. They take good care of the inner man. Hygiene, physiology, anatomy, etc., are taught by the physical director, Dr. Lillian Welsh, at the Woman's College.

Time allotted at Woman's College, three hours weekly during scholastic year. System and apparatus, Swedish. Gymnastic games—basket-ball, tennis, golf, hockey. Results claimed: improvement in general health, increased muscular strength and endurance; better habits of breathing ("costal" often replaced by "diaphragmatic"); improved carriage, gain in physical courage and self-control; correction of various abnormal conditions; improvement in habits of dress.

The Bryn Mawr School uses Swedish methods, teaches fencing, swimming, basket-ball, tennis for larger girls, various games for primary classes. Time allotted, at least two periods weekly, forty minutes each, for larger pupils; daily for primary classes. Recess, in main school, five minutes between periods and from 11.40 to 12.10.

Results claimed: General improvement in carriage, in quiet response to command. in muscle tone; also correction of minor defects, slight muscular curves of spine, etc. Improvement in general health,.increased breathing capacity.

The Y. W. C. A., Y. M. C. A., and Turner organizations are alse doing very commendable work in physical training, reaching large numbers of young men and women; and offer good instruction and gymnasium facilities at most reasonable rates. They deserve a liberal support and encouragement.

Public School Conditions, Problems, and Methods.

By Miss Rebecca Stoneroad—*Physical Director of Public Schools of Washington, D. C.*

Those of us who have made a study of the human organism have been strongly impressed with the fact that at no time in the life of the individual does body training secure such lasting results as during the growing period. At that time we are building for the future. The future man in his physical and mental make-up will depend greatly upon what is done in the years when the processes of waste and repair are most active.

One of the strongest arguments in favor of physical training from the standpoint of the educator lies in the fact that the best mental results can be obtained only when all physical aid has been rendered to the proper functioning of the nervous system. The great truth we must bear in mind is that physical education, like all education, is a training of the nervous system, and bears a direct relation to mind in that all mental action is dependant on the nervous structure and its blood supply.

The power to *do*, both physically and mentally, is, after all, the great end of education. The degree of education in any one direction is shown by the ease with which we perform the mental or physical act.

Finally, physical exercise, when systematized, becomes distinctly mental training, and has its place in the public school system similar to that of manual training, which has been introduced not merely to teach a boy how to make a table, but for the actual mental training which results from making the table.

In the best schools of the present day the whole scheme of education is one of body and mind training. The two are going hand in hand. Many of the activities of the school-room are for the purpose of hand, eye, and ear training. Particularly in the lower grades is this the result of the processes by which knowledge is first acquired. In other grades, singing, drawing, clay modeling, writing on the blackboard, sewing, cooking and manual training are all forms of body training which are complemented by gymnastics, giving work to the large muscles of the trunk and legs which are ordinarily neglected. Here is where physical training fits into the public-school system, binding into a perfect whole all lines of school work and completing the scheme of body-training. In such schools pupils obtain an all-round physical development, resulting in an all-round mental development.

It is only in schools where physical training has been introduced as a co-ordinate branch of instruction and made a part of the framework of the education of our children that it has come to stay.

Need of a Physical Director.

It is quite possible for the enthusiastic teacher who is appreciative of the value of exercise in school, and who has had some training along that line, to do much which deserves credit; yet the absence of a physical director is greatly to be deplored, for I believe that in a large city, where the work is compulsory, and perhaps unappreciated by many, it is impossible for this branch of instruction to thrive snd grow without the fostering care of one who is constantly studying and striving to improve methods and conditions.

The work of the physical director covers a much broader field than that of being merely a teacher of gymnastics. It is his duty to look into all matters pertaining to the hygienic surroundings of children in school, and to use all possible influence toward bettering conditions as they exist. Among the many things which he seeks to obtain are good ventilation, proper arrangement of light, healthful sitting positions, separated seats, so that pupils do not touch each other when sitting; adjustable seats and desks which fit the child, so that his feet rest comfortably on the floor, and he is not obliged to assume atrocious positions when writing; a lessening of the number of children in one room; aisles at least twenty inches in width; separation of childrens' clothing in the cloakroom by means of partitions; tests of sight and hearing of all pupils; personal drinking cups for each child; filtered water and good sanitary condition of the school building. These are lines of improvement along which the physical director can wield a wonderful influence. Not that these things can be accomplished by one alone, but by interesting teachers, school officials, health officers, medical societies, health associations, and civic centers, with united effort, much can be done for the health of our children in school.

The question often arises: "What can be done to place this department on a firm basis and give it permanent place in our school?"

Considering for the present city school, we should urge:

First, the employment of a director, with assistants.

Second, its introduction as a co-ordinate branch of instruction.

Third, the introduction of a throughly graded course of exercises covering the years of school life, progressing with the years and growing powers of the child.

Fourth, the introduction of a course in physical training into that normal school from which our city teachers are appointed

Fifth, the appointment in the board of education of a committee on physical training which will look after the interests of this department and urge everything favorable to its development.

Sixth, the education of the public. No support is stronger than that of public sentiment. We need to bring to our aid the strong power of the press and to interest in all possible ways parents, physicians and ministers, the teachers of the people, letting them know what is being done along this line.

The value of the work as a whole will depend upon what is done daily in the school by the regular teacher. Considering all that she is called upon to do, it is surprising how well she is able to carry on the work after a few years of training and practice. If she is a good teacher in all other departments she is quite likely to be good in this. Of course it is quite possible for an uninteresting teacher to make a most attractive subject in any branch of learning seem stupid, while a teacher who handles her subject skilfully, and has a certain personal magnetism, can make even so uninteresting a thing as phonic drill seem fascinating. I have seen the regular teacher give gymnastics which, as regards results obtained, would be worthy of a specialist.

Not "Systems," but Principles.

The question of "system" is one which has been a stumbling-block to many in years past, and there is no doubt that the cause would have made greater progress had there been less contention among leaders in regard to this subject.

As special teachers, we should know every system, so as to do the best work in the one of which our judgment specially approves; we must be sure of our principles and proceed to be original in our methods. To be systematic in the whole is the one great essential.

The specialist should know educational principles and the psychology upon which they are based; should know all lines of school work, including the kindergarten, the results of child study, school hygiene and sanitation; should be in touch with similar work being done in all parts of the world, and keep abreast of the latest and best literature on the subject. The possibilities for mental growth are never-ending. With the growth of the teacher comes changes in the work. For this reason we cannot go on teaching in the same way that we taught years ago.

Methods must advance with the times. Our future efforts must be, and should be, the outgrowth of the best thought of the workers of the present day.

Educators are strongly advocating more of the play element in all lines of primary-school teaching. Education by means of play for little ones is ideal in its method. So in our primary gymnastics it is quite possible to have the exercise playful in character, the teacher playing with the children, perhaps pretending to do things which they do outside of school, or imitating the movements of familiar animals, or playing games, the whole having some purpose in view. This is regulated play, and is the kindergarten idea carried into the primary school. The kindergarten is rapidly working its way in many parts of the country as a part of the public-school system. With such play work in our primary schools, we will be connecting the plays and games of the kindergarten with our public-school system.

I beg to quote from my last report to our Board of Education in regard to recess plays and games:

"Plays and games form a necessary part of any general system of physical training. They supply the element of recreation.

"Play has the hygienic value of securing the greatest amount of physical work with the least expenditure of mental effort. Gymnastics do not take the place of play, nor does play take the place of gymnastics. For a perfect system of physical training the two should go hand in hand.

"Since the conditions of the school-room are such as to make free play impracticable in the higher grades, no better opportunity can be had to obtain this recreation than at the time of the

A few years ago there was a movement in certain parts of the country to do away with the daily recess on certain moral grounds. It would seem wiser by special attention and supervision on the part of the teacher to improve the daily recess than to do away with an institution which offers the very best opportunity for rest, recreation and the spontaneous activity of play. Yet the school recess as carried on is capable of the greatest improvment. In many cases the teacher is absolutely ignorant of what her pupils are doing during this playtime. So far as observations goes, the children indulge chiefly in screaming and aimless romping, or else in moping and reading. Pupils should be taught certain games adapted to their age and to the circumstances, over which the teacher should have oversight without interfering with the spontaneity of the children. Children should be encouraged to bring their jumping ropes and balls to school. Many pupils would be willing to contribute bean bags, a bean board, jumping ropes, stilts, etc.

Open-Air Exercises.

"Whenever the weather permits, all such play should be in the open air of the playgrounds. Having such guidance, knowing what can be done, how to do it, and having the means by which to do it, pupils can take the initiative and proceed according to taste or inclination, thereby making the daily fifteen minutes given for recess a period of physical profit as well as mental recreation.“

It may be asked: "What proof is there that children improve physically by this work?" Unfortunately, we cannot present the actual photographs of "before and after taking," nor are the lasting benefits those to be seen by the eye.

For those who want visible proof of the good effects of physical training in a city-school system I refer to Washington, which has had such work for nine years. The facts in evidence are:

First, the older teachers who were in the schools ten years ago give expression to the wonderful improvement in appearance, manner and carriage of the children, and in the discipline of the schools, which they believe to be the result of training received in connection with this work.

Second, comparison with city schools which have never had physical training shows greatly to the advantage of our Washington schools.

Third, the special teacher visiting a school room is invariably able to detect the new children who have never had gymnastic work. The regular teacher smilingly remarks, by way of apology, that such a one, who is awkward with her body, "has not been ng in our schools."

Fourth, muscular control is shown when taking up a new exercise which would have been impossible without previous gymnastic training.

Fifth, self-consciousness during gymnastic work on the part of older children, both in the boys and girls, has entirely passed away.

Sixth, the teachers in the High School report that each year the pupils come to them better trained than in previous years.

Seventh, visiting educators invariably speak of the general physical appearance, the carriage of the body and the cultivation of manners in Washington school children.

It is to be hoped that the time is not far distant when State normal schools and every school for the training of teachers will have in the faculty a teacher of physical training whose work will consist not merely in giving exercises to the normal class for their own physical good, but will give a course in public school gymnastics. This should include both the theory of teaching and actual practice in giving exercises to pupils in the practice classes.

Young men and women going from these schools will leaven the whole country, and carry the work into small towns which probably never could afford the services of a special teacher.

Country Schools.

Country schools need this work as much as city schools. Many persons have the idea that exercise is not needed here, because the children get plenty of it in their outdoor life. But more than city children do they need the body training which comes from a course in gymnastics. To place the foot down quitely, to move with ease, to carry the body well, all require muscular control, which can and ought to be cultivated in children whether country or city bred. These things have a reflex effect upon the individual and increase his self-respect much in the same way that one is affected by the wearing of good clothes.

A teacher in the country school has a rare opportunity to give those under him all the benefits to be derived from outdoor sports. By judicious choice and leadership such games and plays could be encouraged as have special value in developing the qualities of alertness, quickness in execution, daring, bravery, and generosity.

Referring to the necessity for gymnastics in country schools, Mr. Hughes, inspector of schools in Toronto, Canada, says:

"Teachers of rural schools usually excuse their neglect of drill by saying that their pupils get enough physical exercise. They forget that strength is not the only benefit resulting from exercise.

Look at those lines of well-drilled boys in their school yard ready to march into school! Five hundred manly-looking fellows they are, erect in figure and graceful in action. See that boy near the center of the second line! You can pick him out at a glance from thrice 500 boys. How his shoulders stoop, how clumsy is his manner! He is fresh from the gymnastics of the hoe and the pitchfork. His teacher from the country stands beside us, and hearing our criticisms, says: "You need not criticise Tom. He is stronger than any other boy of his age in the line." This may be true, but you, as his former teacher, deserve no credit for his strength, while you should receive severe censure for allowing him to grow up with a deformed body and an awkward gait. Farmers' sons and daughters are as much entitled to the physical, mental and moral benefits of calisthenics and drill as are any other children."

Dr. Schaeffer: When the Maryland Public Health Association complimented the Physical Education Society with the request that they take charge of this meeting it became my duty to arrange for the speakers, and looking around for a practical worker in this line I confess I could think of no one else than the lady who has just addressed you. The work she has been doing in Washington is of original character and has attracted widespread attention throughout the country. It takes a special training to inaugurate work of this kind, and as our last speaker has had this, being not only a college woman, but having had a normal school training, special training in physical culture and a course in psychology under Dr. Hall, I hope you will quiz her very thoroughly and get as much information out of her as possible. I think she doesn't know that I saw the work she has been doing in Washington. When I went over to engage her services it was a rainy day, and I took advantage of an opportunity without her knowing it to see how the school was conducted. I fell into enthusiam over it as others have done.

It may be of interest to you to know that Miss Stoneroad has put her views into printed form, and we are looking forward with pleasure to the appearance of this little volume. I am glad to hear her speak of the necessity of training for country children and of fact that the gymnastic training of the hoe and the spade is not what the young man wants. I have seen the work performed at the schools in Chestertown and Easton and it is delightful to find such healthful children so graceful and with such a fine carriage. You want the country child to look forward to the accomplishment of something more than mere strength.

There is one thing more I want to say: It is only fair, I believe, to state that a great many of the breakdowns in school are due to unhygienic treatment at home. I do not think that physical training can be made a success in schools, unless good hygiene accompanies it.

Col. Rogers: I do not rise to say anything special on this subject, but simply want to bring out others, for I know we have several here who are well equipped to talk upon the subject. Baltimore county, of course, appreciates the value of physical training, and it already has a foothold there in a number of the schools. Of course when we carry out the set curriculum that is laid down for us to obey, but little time is left perhaps for physical training, but nevertheless, some time can and should be taken for this purpose, and the question of scientific training comes up in this connection.

Miss Cahoon: I want to ask Miss Stoneroad what I can do on rainy days with a school of fifty children, belonging to three different grades, and confined in a comparatively small room. I am earnest in this work, because I think I have been able to straighten out three little girls that were pre-disposed to consumption. On such days as I speak of the children at recess cannot go out, and I should like to know what to do to utilize their time.

Miss Stoneroad: It requires considerable planning to select work for one room, but I would suggest one of the old games which is capable of great variation, that is the game of "follow your leader." I have just been planning for my second grade girls a lesson of that kind. The children might begin by walking around the room, then up and down the aisles, then running around and jumping to touch some high point, the leader always doing the thing first, and the others following. Then they might run around, stooping occasionally to touch the floor, or a table leg near the floor, or some low point on the wall, then jumping over the seats, beginning with a low jump. The teacher will do this first, and then later a bright boy of the school will be made the leader. I want to beg you not to be afraid to let the children have a good time, for we must have less restraint in our primary schools. There is no reason why a child standing in school should not feel free to turn around and look at the blackboard if he wants to, and when a teacher has her little class in reading there is no reason why that class should line up in front of her in a perfect line, with the toes on a regulation mark. Let them stand in a natural way.

Miss Cahoon: Would you suggest the same work for girls in the older grades?

Miss Stoneroad: In the higher grades I think there should not be that entire freedom that we have with the little ones, for they should be taught a certain amount of self restraint.

Dr. Fort: I have been very much interested in what Miss Stoneroad has to say about play for children, especially as I have noticed the inability of a country child to play games. An investigation of the plays of the school that my own children attend shows that they are limited to four, one is the batting of a ball a distance of about fifteen feet in front of the school, the second is the game of caddy, the third is marbles, and the other is that of "follow my leader." The county road runs in front of the school house and forms a part of the play ground. Now it seems to me a new chair might be established in our Normal School to first teach the teacher some games, that they may teach the children. The county boy's life is a busy one. He begins early in the morning by bringing out the cow and feeding the chickens, and when he comes home from school the cow and the chickens are to be attended to again. It reminds me of a page in a friend's diary; he said "I got up this morning, washed my face and went to bed." No one can appreciate better than myself how the peculiar gait that belongs to a country boy is acquired. They learn it when they begin to follow the cow's tail. The difference between a child who has received some physical education and one who has not is well shown in a case that came under my notice. A little girl who had been attending a kindergarten was admitted to a country school, and the games that she introduced into that school have been a perfect revelation to those children, and the teacher has no trouble whatever on rainy days.

Mr. Morrison: We have observed in the School for the Blind the advantages of physical training probably more definitely than can be done elsewhere. No class of children in the world can need such training more than the blind ones. To show what may be done with some of them I may refer to one who, had I known of his condition at first, would not have been admitted. He was in a condition of idiocy. At an early age he had been placed in a basket, and kept there so long that he had lost the ability to walk. He looked half starved, and the only thing he would say was "I want a stick." I was going to send him back home, when one of the teachers, who had shown some interest in him, asked permission to keep him. I agreed to do so for a while if she and the nurse would take care of him. They have done so, and now the little boy walks around and has improved wonderfully in brightness. He will get a fair education, and though he will probably never be a bright man, he is saved from becoming an idiot.

We have found, since we have been training the children physically, that we have produced a very different class of pupils. A child comes in at first very timid, afraid to run or even to walk around, but soon begins to play and then to run all over the grounds. We have been following this line long enough now to see the results and it is noticable in some of our graduates. More of them than formerly are able to do the work they are fitted for and to take their places in the world.

Miss Porter: In regard to the question of establishing a chair for teaching the teachers I would like to say that they have such a thing in connection with the schools in Sweden. All those who wish to teach go to the southern part of Sweden and take a course of this kind under the leadership of a competent man, and for one month they play games in the open air to fit themselves for their winters' work. Many of the games they have borrowed from us or from the English. They play basket ball and a game similar to tennis, which needs only a ball the size of one's hands, and makes an excellent game. They are also taught to make their own apparatus. The session begins about the fifth of June and runs to the eighth of July, and during that time the only hours spent in the house are at meal times. They are often outdoors until ten o'clock in the evening, for as you know the sunshine does not leave them until late.

Now would it not be a good idea for Miss Stoneroad to start a summer school? I am sure it would be of great benefit to the teachers themselves to spend a month in that way.

Miss Cahoon: I would like to ask Dr. Schaeffer if there is any place where such a summer course can be taken in this part of the country?

Dr. Schaeffer: Summer training schools are mostly north of us. There is one at Harvard University, conducted by Dr. Sargent, and there is a very good one at Chatauqua. There used to be one I believe at Martha's Vineyard and there is an excellent German school in Milwaukee. There are very few near home.

Dr. W. H. Welch: I am sure every one present joins me in expressing to Miss Stoneroad our sincere thanks and great appreciation for her very important address. There are one or two points I would like to speak of, and I regret that I am not capable of adding anything of value to the practical aspect of the subject, but as regards the physiological phase of the question, though I have no expert knowledge of the subject, it is one in which I am naturally interested. Miss Stoneroad spoke of the difficulty of having any measurable index of the improvement that takes place in weight, growth, etc., so that we can make sure that this improvement is attributable to the physical exercise and not to ordinary growth. Dr. Boyer, of the United States Navy, has made a special study of that point with the cadets at Annapolis, and he has proven conclusively that properly directed physical exercise does actually increase the rate of growth and the height of the cadets. He shows that those who are trained by these methods attain a greater height that can be expressed in figures. I do not remember them exactly, bnt an inch and a fraction of stature is attributable to the physical exercise and not simply to the natural growth of the individual.

Now how does the exercise act physiologically? We commonly think of it as acting mainly upon the muscles of the body, but it acts rather upon the nervous apparatus and especially upon the nerve centers. The ability, for instance, to endure fatigue rests largely upon the innervation of the heart. The wind, as we express it, in running, is a function of the heart and not of the respiratory apparatus. When a heart becomes enlarged from excessive exercise, as in certain forms of college athletics, the increase in the size of the heart is a diseased condition, but the increased powers of endurance that come from physical exercise is due not to an increase in the size of the heart, but to a change in its innervation. It is a training of the nerves and nerve centers that is of importance and all the points brought out in these papers as to the improvement in carriage, manners and general morality of the individual are indicative of the value of the training upon the nerve centers, the brain and the spinal cord. These are the parts that derive the greatest benefit and not the muscles of the body which show the visible effects.

Dr. Fulton submitted the following resolutions:

Whereas, the problems of school hygiene have received very much of the attention of this association, and are attracting popular interest in an increasing degree; therefore,

Be it resolved, That a special section of the Maryland Public Health Association shall be created to take charge of so much of future programmes as shall relate to school hygiene. To this end the president is authorized to appoint a committee of seven members of this association, who shall be known as the Committee on School Hygiene.

This resolution was passed and the chair appointed as the Committee on School Hygiene: Col. Chas. B. Rogers, Mr. M. B. Nichols, Mrs. Laura P. Todd, Dr. A. E. Sudler, Mr. Henry Brauns, Dr. Saml. J. Fort, and Dr. Wm. J. Todd.

Adjournment.

The afternoon session was devoted to an exhibition of the methods of Physical Culture employed at the State Normal School, the Young Women's Christian Association and the Turnverein Vorwaerts.

EVENING SESSION.

THURSDAY, MAY 12th.

Public Baths in European and American Cities.

REV. T. M. BEADENKOFF.

The subject of my remarks has been given a rather high sounding title, but what I shall speak of is merely that which I have observed slightly, and read more about. I am the pastor of a little church in Canton, and in walking about the streets near the wharves in that neighborhood I could not help observing the difficulties our small boys met with in trying to secure a swim during the hot days. It occurred to me that I might try to secure permission for them to enjoy this swim without fear of the police and the law. That was the starting point of our Baltimore public baths.

The importance of bathing facilities is a matter of recent growth, and I suppose that a great many people a few years ago did not appreciate the necessity for such things.

In London, within a few years, $2,500,000 have been spent in providing bathing facilities and public wash houses. You remember that European cities supply places where poor women, on the payment of a penny or two, wash and dry their laundry. So far as I know that custom does not exist in this country. London has spent $500,000 a year for the maintenance of these public baths. Liverpool was the city that first began to consider this subject, as far back as 1794, when they provided a bath near the pier; since that time the practice has grown until they now have eighteen baths located in various parts of the city, upon which they have spent $750,000. In 1893 or 1894, throughout Great Britain 191 municipalites supported public bath houses, and the receipts from these were over $200,000,000. From this you can see what a large matter it is in that country with a population equal to only one-third of what we have here.

Dr. Hartwell and W. H. Toulman, both formerly of the Johns Hopkins University, have studied this question thoroughly, and have recently published books which I can well recommend. I may refer to Dr. Hartwell's report on the baths in Glasgow to give you an idea of their general management. They are not absolutely free baths, the charge for boys and girls being two cents, or the English penny. Clubs may be formed, and between 9 and 10 P. M., when the greatest rush of the baths is passed, twenty or thirty are admitted for a half a cent a piece. They provide also special rates for schools, Sunday schools, and working men's clubs.

On the continent also the public baths have become a permanent and extensive institution. I remember when I was in Hamburg, that on going down into the neighborhood of the wharves I saw so many boys and men with pieces of linen, apparently towels, under their arms, all going in the same direction day after day, that I wondered if it was some new custom for the workmen to carry towels into the shops. On inquiry, I found that they were all on their way to the public baths. I remember with great pleasure seeing in a little town, not far from Leipsic, with only 9,000 inhabitants, the provision made for public baths. The bather had to cross to the opposite side of the river, and the trip by boat cost one penny. the baths on the other side being free. This town was not as large as Hagerstown, Frederick, or perhaps Annapolis. In Berlin, Vienna and Paris the conditions are different, and the baths have developed along different lines. The military system of the Germans is such that in many towns there are barracks for thousands of soldiers, and baths must be provided for them. There the shower bath is a chief necessity. From this soldiers' bath, the workingmen's baths and the school baths have developed.

I remember when we recommended in Baltimore that the shower bath should be placed in our schools there was great commotion among the teachers. They said, "we not only have to teach history and geography, but they have added cooking and sewing to the list, and now they want us to wash the children when they come to school." If some of you could see the children in some of our Baltimore schools, I mean down in the district where you expect to find them not so clean and well dressed, you will surely say that money would be well spent in establishing these baths. They attempted to do this in Boston a few years ago, but the question was voted down, I suppose because they had the same feeling that the schools were doing too much already. The last report of their school board, however, shows that by a vote of eleven to eight they have decided to try one as an experiment, and it seems to me that is the only fair way to settle the matter. If the experiment proves successful then we can discuss the question of extension. In Germany it was found that the children enjoyed them, and that they were beneficial, so that now, after ten years of experience, they are established in fifty places through Germany and Denmark.

About America there is not much to say except that baths are quite scarce. We must distinguish between public baths for cleansing and those for recreation. Provision has been made for a number of the latter class in this country, and I presume New York city has spent several hundreds of thousands of dollars for that purpose. Floating baths for recreation have been provided along the East river, and they can be found at many points on either side, from the Battery up, open between the months of June and October. These are for recreation, for it would be a falsehood to call a bath in the water of the East river cleansing.

There is one city about which I am sorry to say I have not obtained satisfactory information, that is San Francisco. Perhaps someone here will be able to tell us something concerning those magnificient baths provided by Mr. Sutro. Chicago and Brookline, Massachusetts, have each established recreation baths.

There have been two attempts to establish baths for cleansing in this country. One was started in New York city by the Association for the Improvement of the Poor. It has been in existence now for five years, and the attendance has increased from 15,000 to 96,000, which indicates that it met a "long felt want" as we call it. Many people do not bathe because they do not have the conveniences. Baltimore in some parts of the city has bathing tubs for nine persons in the hundred. What about the other ninety-one? Philadelphia, in the slum district, provides for seventeen in the hundred; New York for two and one-half in the hundred, and Chicago has four in the hundred. Here is an excellent opportunity for some wealthy philanthropists to provide a necessity for a large class of people.

Public Baths in Baltimore.

Mr. W. H. Morriss.

Mr. Beadenkoff has already told you how a few of us, Dr. Jas. Carey Thomas, Mr. Eugene Levering, Mr. Beadenkoff and myself, about five years ago, became interested in this matter of furnishing the boys and young men of Baltimore with some bathing facilities during the summer. We were led into it largely by Mr. Beadenkoff's experience in Canton, where he had observed the boys arrested from time to time for swimming in the harbor. It seemed hard, that with all the water front of Baltimore, it was impossible for the boys to take a bath without risk of losing their clothes or perhaps spending some time in the lockup. So we asked the city to permit us to use some sheds where we could at least secure the boys against the loss of clothing. The city gave us this permission, and appropriated $500 to carry out the work. We erected fifteen sheds at a place called Winan's Beach, which is at the foot of Light street, near the Ariel boat club house; fifteen more on Gwynns Falls, and fifteen at Canton. We put men in charge at each place and spent a little more than $500 the first year, but we secured some stock in trade. In addition to this, we erected a float and spring-boards and had the beach cleansed of refuse, to make an attractive bathing shore. We have usually opened them about the middle of June and closed just after the 12th of September holiday. This is about all we have attempted until last year, when we were so distressed at the condition of the water at Canton that we concluded to try Mr. Beadenkoff's plan of erecting shower baths. These were built, the city furnishing us all the water we needed and Mr. Brooks kindly allowing us to tap the service pipe on his property.

The city appointed us a commission to carry on this work, and during the winter we suggested to the school teachers the project of trying the shower bath in connection with one of the down-town schools. I think the matter was misunderstood, for they promptly held a teachers' meeting and did not hesitate to tell us what they thought of us for suggesting that they could have anything to do with cleansing the children. Of course we had no thought of making the teachers responsible for these baths. We had a hundred dollars given us by a lady interested in the work, which we thought of using for such an experiment, so we visited some of the schools and saw the children, which was an ocular demonstration of the need of some such work as this. That is about all there is to report concerning the baths of Baltimore.

When the Labor Commissioner came to our city to secure statistics he found in that portion of Baltimore between Broadway and Jones' Falls and bordering on the harbor, a population of 18,000, of whom 16,000 lived in houses not provided with bath-rooms. It was in this district that we had, in the innocence of our hearts, proposed to established some simple shower-baths.

I am glad to say that the city has this year renewed our appropriation of $500 which was cut off last year. It is possible that if such an organization as this should take hold of the matter and present it properly to the public our appropriations might perhaps be made larger. Last year we had 30,000 men and boys to use our bath-rooms. Those who brought their own towels and trunks were charged nothing. The appropriation from the city was $500, and to this we were able to add $239 received from the bathers through the small charge made for towels and trunks. I think a visit to any of the places would show you that much good is being done there during the summer months.

Dr. Fulton: The original impulse for this particular feature of the programme came from Dr. Mary Sherwood, who has asked me to read to you some of the views of Dr. Toulmann, as published in the last number of the Health Magazine, (reading.)

Dr. Schaeffer: I hope there is some philanthropic gentleman who will immortalize his name by establishing a public bath in this city, and I think we ought to have a committee to look up the man who will make his name great by this means. Anyone who has looked into the subject at all can see that the suffering for the want of such a bath here in the summer is really pathetic. When one has occasion to address one of the clubs among the working men or working girls, if he asks what theme would most interest them, it is very common to be asked to say something about the care of the skin. Now what is the use of saying anything about the care of the skin if we must leave out cleanliness?

As showing how people will take advantage of these baths I remember reading what Dr. Kellogg said of the little project he started in Chicago. On Christmas morning there were 100 men in line at 6 o'clock in the morning waiting their turn for baths. Many of them were shivering with cold, and did not have an overcoat, but they were willing to stand in line for the privilege of getting a bath.

Dr. Rohe: I was very much interested in the account Mr. Readenkoff gave of the development of the public bath system in Europe and in this country. I think both he and Mr. Morris very wisely dwelt upon the importance of the idea that these baths should be for cleansing purposes. The prevailing idea seems to be that the public bath should be some place where people can go in swimming, and very little attention has been given to the idea that it is a place where people can get clean, while that is really the only thing we have to do with it as a sanitary body. It seems to me that is the point upon which we should lay special stress in endeavoring to create a public sentiment.

A bath-house put upon our extensive water front would not be worth much for cleansing purposes, and that is the case in nearly all other cities. A bath-house for the use of the public, which would be patronized by the people who need it, should be in the business and residence portion of the city where these people happen to be when they need to get clean. If a bath-house can be opened and kept open the year around in the section of the city where the working men are engaged in occupations that make them dirty, it would prove a great benefit, for these men would use it before going home at night. That is really the advantage of having the school bath. It is not that the teachers are expected to bathe the children. Curiously it seems to have escaped the attention of nearly everyone that it was in a little town in Michigan that the first attempt was made to establish a school bath, and I am told, with success.

At about ten years ago, Baltimore passed a law requiring that each house thereafter built should have a bath room attached, and I do not know that any other city has gone ahead of us in that direction. As we got rid of frame shanties by law, we will probably eventually get rid of the houses without bath rooms, but that does not remove the necessity for public institutions of cleanliness in the business districts, where one can go throughout the day.

I have been very strongly impressed with the idea that the association of a swimming bath with a cleansing one is not the correct principle, and I believe that if we disassociate these two we shall get along much better. There is no tendency upon the part of municipalities to furnish the people with luxuries.

DR. WELCH: As to the question whether it is desirable to associate swimming bath with shower bath, recreation with cleanliness, I would like to ask if it is not desirable to combine these features if it can be done. As I understand, it is not proposed to have compulsory bathing, and hence it is desirable to make it attractive.

MR. BEADENKOFF: I think it is simply a question of expense to the city.

MISS PORTER: The Swedes seemed to have solved this problem very satisfactory. Stockholm is built upon seven islands, and has an extensive water-front. One will see the people there going to the baths with soap, towel and a lunch, the latter to be used after the bath. The children have certain hours for their bathing just as for their other lessons. They are expected to be at their places at the proper time, and so greedy are they for the exercise, that many of them are partly undressed before reaching the rooms. At the sound of the teacher's whistle, they must come out of the water and give way to other classes. The bath-houses are open to the public for the small sum of two and a half cents, and a stranger in Stockholm is at once impressed by the large number of public bath-houses.

In one of the magazines, I think a recent number of Munsey's, there is a picture of a number of little boys in a row, each washing the back of the boy in front of him. That was really a picture of some of the basement baths in the small towns of Sweden. The children are expected to take their cleansing bath in the winter season just as regularly as they do the recreation bath in summer. There is no bath-room in the average private house in Stockholm, so the rich and poor alike patronize the public bath.

Dr. Fulton: As a practical way to close this discussion, I would like to read the following resolutions:

Whereas, Public baths are a proper part of municipal hygiene, a worthy outlet for private philanthropy, and a profitable adjunct of large industrial enterprise, therefore

Be it resolved, That a committee of five members of this association be appointed by the chair to co-operate with other organizations in a combined effort to establish peoples' baths in Baltimore.

Dr. Fulton: The third point in these resolutions has not been discussed. Bathing facilities for laboring people have been emphasized abroad, but in this country to a small extent only. The Westphalian miners all have their free baths, and use them regularly. So have many working people in England, and one large company in Pennsylvania has provided bathing facilities for its workmen, and has found excellent economic results, in that the men do better work, have better health, and there is a feeling of contentment among them, so that they are less influenced by the labor agitator.

The resolutions were unanimously adopted, and the chair appointed as a committee, Dr. Sherwood, Dr. Schaeffer, Dr. Neff, Dr. Jones, and Miss Porter.

The nominating committee, through Dr. Stokes its chairman, recommended the following list of officers for the coming year:

President—Dr. Geo. H. Rohe.

Vice-Presidents—Dr. Edward M. Schaeffer, Mrs. Daniel Miller, Miss Eliza Ridgely, Mr. Chas. R. Hartshorn, Dr. Howard Bratton, Dr. Augustus Stabler.

Secretary—Dr. John S. Fulton.

Treasurer—Dr. L. Gibbons Smart.

This report was accepted as a whole, and the officers declared elected.

The meeting then adjourned.

The Maryland Public Health Association.

SEMI-ANNUAL MEETING.

EASTON, *November 10, 1898.*

The second semi-annual meeting of the Maryland Public Health Association was called to order by the president, Dr. Geo. H. Rohe.

Rev. Dr. Rich offered prayer.

THE PRESIDENT: The members of the association who do not reside in Easton were well aware that their coming here would be welcomed and that a formal announcement to that effect was not necessary, but notwithstanding this, the citizens of Easton have delegated one of their number to extend to the association a formal welcome to the city. I have the pleasure of introducing to the association, Mr. W. H. Thompson.

MR. THOMPSON: Ladies and Gentlemen—The pleasure, the privilege of entertaining you, comes on this, your second re-union to our conservative little town of Easton; and upon me, unworthy, has been bestowed the distinguished honor of welcoming you.

"Great is he who uses his greatness for all." From the busy arena of their daily routine assemble these eminent professional men, and from the serene security of their homes, these earnest women, to take counsel together and evolve ways and means for the amelioration of human ills; the safeguard of health; the undoing of contagious disease.

Your organization, though new, is both kindly and unselfish, and must take rank among the most benevolent associations of the century. The reforms you propose to inaugurate, in needful but hitherto neglected lines, should commend your labor to all who cherish the public weal. Health is a priceless boon in the highest sense. Without it, rare intellectual gifts, wealth, the surroundings of refinement, nor the beautiful in nature, can be enjoyed; even life itself becomes a burden and death is coveted as a happy release. Folly and ignorance, long recognized as the common curse of mankind, are the prolific sources of disease and suffering, but knowledge practically applied to what we eat and drink, to the homes we occupy, and the highways we use, will promote that physical soundness and vigor which are the necessary equipments for mental prowess.

Having studied not so much for your own sake, as for the sake of those who studied not for themselves, what you have acquired by tireless investigation, you offer as a free gift to all who will accept the knowledge, that they may live in a better and truer sense. Knowing as you do, there is scarce any folly against which warnings are of less efficiency than the neglect of health, you have proposed to yourselves this unenviable task, that only good may come to your fellows.

The recognition and grateful appreciation of all the communities in the State must wait upon your annual deliberations, and for these humanitarian labors, not we alone, but posterity, that great unknown quantity, will rise up and call you blessed.

We welcome you therefore, as messengers of good will and the benefactors of your generation; we welcome you for the sacredness of your ministry to others; and may health, happiness and longevity appear as the fruitage of your beneficent work.

The President: Ladies and Gentlemen—A good many of us were somewhat doubtful of the advisability of coming to the Eastern Shore, particularly to this favored portion, in order to give advice concerning health.

In spite of this, however, and thanking you for the welcome so cordially extended, I feel that it would not be inappropriate to say a few words here about the object and history of the association.

Less than two years ago the iniatative was taken by some members of the medical profession of Baltimore and others, at the head of whom stood Dr. Schaeffer, who is suspected of being an Eastern shoreman, and Dr. Fulton, whom we have good reason to believe is a native of the Eastern Shore, though he denies it, to call a meeting of the public health and public school authorities of the State. To the surprise of everyone connected with the issuing of that call the response was large, and after a very interesting and profitable meeting of two days the Maryland Public Health Association was formed as a permanent successor to that conference. There were at that time 318 members enrolled from the different portions of the State; not 318 medical men, because this is not a medical association, but public spirited men and women of the city of Baltimore and State of Maryland.

The objects of the Association, as expressed in the constitution, are that "the general aim of the Maryland Public Health

Association shall be to promote the sanitary welfare of Maryland by uniting the influences of all citizens professing interest in sanitation, by co-operation with the State and local boards of health and with other sanitary organizations ; by encouraging the study and practice of preventive medicine ; by propogating a knowledge of hygiene through public meetings, lectures and publications."

I may say that the objects so well stated here are being carried out by the association. It holds two meetings or more a year, one in the city of Baltimore and one in some county of the State.

We have been fortunate in having had throughout the existence of the association the cordial aid of the press.

We have also had the association and active co-operation of the better half of mankind, without whose aid no public movement ever succeeds. Some of the most progressive and active members of the association are women. They have been with us from the beginning and I hope that they will remain, and that their number will be largely increased.

I would recommend, as a method of extending the work of the association, the formation of local branches, and it seems to me there is no city in the State where a local branch could be established with so much prospect of successful work as here in Easton.

The programme as arranged for these meetings comprises for today a study of the water supply, infectious diseases, the dissemination of tuberculosis through the medium of schools, and the demonstration of the organism which we now know causes malaria.

I have warned Dr. Thayer that in his address for this evening he has come to the wrong market with his wares, for the subject of malaria has no interest for the inhabitants of Eastern Shore, except such as belongs to an antiquarian subject.

Tomorrow the subject will be school hygiene, and we hope to have present as many of the citizens of Easton, as are interested in public schools; and, who is not interested in the health of children? Perhaps it is a matter of interest, certainly to those of us who are not residents of Talbot county, to know that it appears from the public records, that on the 25th of May, 1774, the Bishop of London addressed this question to the See of Maryland: "Have you any public school for the instruction of youth, if so is it endowed, and who is its master?" There were two replies from Talbot county, one from the Rector of St. Peter's parish, which stated, "there is a school endowed, but no master chosen as yet, as the land has not been purchased ;" one from St. Michaels, which stated, "there is no school, but a certain sum has been established for erecting one. There will be about twenty pounds for a master, and we hope things will improve every year, but as yet the scheme is in its infancy." This letter of Henry Nichols was the most encouraging one received from Maryland at the time. It is stated by Scharf in his history of Maryland, the first manual training school was established by Thomas Bacon of St. Peter's parish in 1750. I have been informed by Mr. Nichols, chairman of your School Board, that there are now seventy-eight schools in Talbot county, and that $40,000 a year is spent in their maintenance. I am sure we all agree that this county is to be congratulated upon its record. I also saw this morning a manual training school, that may be looked upon perhaps as the legitimate successor of that earlier charity school started by Bacon.

The following candidates were then elected to membership;

Dr. Richard Thomas, Baltimore; Mr. James U. Dennis, Equitable Building, Baltimore; Dr. R. M. Hall, 1019 Druid Hill avenue, Baltimore; and Mr. C. C. Speed, Catonsville.

Upon motion of Dr. Penniman, a recess of fifteen minutes was taken to witness the gymnastic exercises of the school children.

When the meeting was again called to order at 11:15, Dr. Schaeffer moved a vote of thanks to the school for the exhibition just given, and to the teacher who so ably conducted the interesting exercises. The motion was unanimously adopted.

Private Wells in Their Sanitary Relations.

By Dr. Chas. L. Mattfeldt—*Health Officer of Catonsville.*

The question of wells and water supplies (especially in relation to causation and dissemination of typhoid fever) in small towns is one of great importance. The danger of contamination of wells by sewage, even in sparsely settled districts, is quite obvious to anyone who takes an interest in the subject.

The prejudice of people accustomed to wells against water companies in rural districts is very difficult to overcome.

I have been led to write on this subject by the facts gleaned from reports of infectious diseases in my sanitary district, and from these data I will endeavor to illustrate the advantages of public water supplies for small towns. I can not better do this than by giving a history of the epidemic of typhoid fever which occurred in my district during the past summer, how I traced its cause and how it was abated. Incidentally I wish to remark that the collection of Vital Statistics brought to my notice the existence of this disease at its commencement, and that had my advice been followed it would have been checked at once.

My district comprises about eight square miles of territory, situated on a plateau about 600 feet above sea level. From three sides there is a gradual descent to Patapsco river, affording good drainage. On the fourth side, to the north-east, the land is nearly level for about three miles, when it descends to Gywnn's Falls. The sub-soil is composed mainly of gravel and clay, and I learned from an old well-digger that the best water bearing stratum is of white gravel, which is found at a depth ranging from 23 to 28 feet. Another point obtained from same source is that the water generally enters the well from a south-westerly direction. The significance of this point will appear later.

Until eleven years ago we depended altogether on wells to supply our water for drinking and other purposes. At that time a water company was formed, and since then the majority of residents have taken the public supply, and converted their wells into cess-pools, (a very pernicious practice, and one there seems no law to reach.) From June 1st to October 15th, 1898, there were reported to me twenty-four (24) cases of typhoid fever. All the cases reported were in families using well water. Not a single case occurred along mains of water company, who have about twenty-five miles of pipe in service, and more than half of the cases occurred outside of the district supplied by the water company. In those cases happening within the company's lines, I found that the people had been using well water because it was cooler and more palatable.

On July 20th, I received notice from a physician, that there were three cases of typhoid fever in a certain family about one mile from my office. I immediately investigated them, and suspecting that the drinking water was the cause, I obtained a sample and had it analyzed by the State Board of Health. Before I received a report upon the quality of the water, two more cases in immediate neighborhood were reported.

The surroundings of the well were fairly clean, but about 300 yards distant, there were two living well cesspools, and one of these had some months previous, received the dejections from a typhoid patient. I cannot give exact data as reports upon infectious diseases have only been made since June 1st.

The analysis of water from well in cases number one, two and three, gave the following results in parts per million:

Total residue	202.	parts per M.
Amount of Chlorine	61.2	
Nitrogen as Free Ammonia	.05	
Nitrogen as Albumenoid Ammonia	.05	
Nitrates	7.7	
Nitrites	Trace.	

This showed that there was sewage in the drinking well and I ordered them to cease using the water.

The next case, No. 4, adjoined these cases, and cases Nos. 5 and 6 and 7 reported to me were northeast of these in nearly a direct line.

From August 3d to 15th, three (3) cases were reported about a half mile in a southwesterly direction from these cases.

About this time I informed Dr. Fulton, the secretary of the State Board of Health, of the state of affairs and requested him to send his inspector to take samples of water from suspected wells. He did so, and results of analysis show that all the wells were contaminated and water unfit for drinking purposes. These three last mentioned cases, I found originated from a case nearby where the dejections from a typhoid patient had also been thrown into a cesspool without proper disinfection.

The only death occurring in this epidemic, occurred in this locality. The analysis from well in case where death occurred was as follows:

Total residue at.	546.	parts per M.
Amount of Chlorine	19.2	
Nitrogen as Free Ammonia	.58	
Nitrogen as Albumenoid Ammonia	.36	
Nitrates	22.75	

wth remark: "This water is dangerous."

I ordered the wells in this neighborhood closed, which order was obeyed and I had no further trouble.

In course of my investigations, I discovered that the wells in cases 8, 9 and 10 were of a uniform depth, about 100 feet apart, and to show that they must have derived their water from the same subterranean water-bearing strata, I learned that during long periods of dry weather one after another these wells became dry, the southwestern one last of all.

A significant thing happened a few days later and proved that the wells were all situated upon the same water-bearing stratum or stream. About this time cases Nos. 11, 12 and 13 were reported. These cases were about midway between cases No. 1 to No. 7 and cases Nos. 8 to 10 and were about in the centre of the town. Surrounded by cesspools, these wells were even more contaminated. The well in case No. 11, showed:

Total residue	912.	parts per M.
Amount of Chlorine	195.2	
Nitrogen as Free Ammonia	.05	
Nitrates	27.6	

These families used well water in preference to hydrant water.

The other cases reported, Nos. 14 to 24, were all in neighborhood of first five cases and analysis from all these proved contamination. I repeatedly advised all residents in this section, that they should either cease to use this well water, or else boil it before using, but they could not understand why this well water which was clear, cool and sparkling should be dangerous, while the water supplied by the Water Company, taken from streams, warm and often cloudy, was safe. An analysis of water taken from the mains of the Water Company, gave following results:

Total residue	140.	parts per M.
Amount of Chlorine	4.6	
Nitrogen as Free Ammonia	Trace.	
Nitrogen as Albumenoid Ammonia	.06	
Nitrates	1.25	

This water is derived from a stream about three miles distant and from an artesian well. The water is pumped from the stream a distance of three miles to a large reservoir. The water before entering the reservoir is allowed to fall about ten feet over a pyramid of rocks so that it becomes thoroughly aerated.

One of the infected families contained nine persons. When the well was condemned two cases of typhoid fever were present in the house. Four cases subsequently developed, all children who surreptitiously drank from the infected well.

I summarize as follows:

1st. No family supplied by the Company became infected.

2d. The infected families all possessed drinking wells of about the same depth, drawing water from the same white gravel stratum.

3d. The course of the subterranean current is from southwest to northeast. The cases of typhoid fever were distributed in a line having the same direction.

4th. The cess-pools of the village discharge into the same white gravel which supplies the drinking water. The dejecta of two persons with typhoid fever are known to have been deposited in these cess-pools a short time before the outbreak.

5th. In those families who ceased using the well water no later infection occurred, while in the families where the use of well water was continued new infections occurred as late as October 15th.

A Waterworks Accident on the Fourth of July, 1898.

By Dr. Wm. Royal Stokes.

(N. B. For an abstract of this paper, see Report of State Biologist, in earlier part of this Volume.)

DISCUSSION.

Dr. Fulton: These papers each contain an interesting history illustrating the progress of typhoid fever in small communities. Dr. Mattfeldt's series of cases illustrates a condition very prevalent in some parts of Maryland. Throughout Baltimore county, as fast as public water supplies have been introduced, the wells have been converted into cess-pools and this practice contributes largely to the prevalence of typhoid. While the under-ground currents vary, as do the surface currents, there is throughout the country a general direction of the current which is well known to well-diggers, and in fact they almost know its speed. Of course the cheapest way of carrying off sewage is to convert these old wells into cess-pools. It is a fact that to pump out a single foot of water from one well will affect the water in another well, in gravel soil, at 160 feet distance, so that, conversely, if a foot of sewage be poured into such a well, nearby wells must be polluted.

In the case related by Dr. Stokes the accident in that community was clearly connected with the pumping of water from a disused well on the fourth of July. It is almost the only instance of these indefinite bowel diseases being traced directly to a water supply.

In order to reach and definitely fix the responsibility for these diseases several examinations were made and the results uniformly pointed to a single well as the source of all the mischief.

In many parts of Maryland conditions differ widely from those illustrated. On the Eastern Shore, where surface disposal of night soil is practiced, we have quite recently been studying an outbreak of typhoid fever in a town where the water supply is of two sorts: open wells twenty years old and older, and driven wells varying in depth from twenty-three to thirty-five feet. The results in the case of the artesian wells were of great interest as another proof of what we knew before, that the Eastern Shore has a water stratum of very superior quality which leaves the inhabitants with no excuse for using bad water. The question arises, how, in places where the surface disposal of night soil is practiced, the typhoid bacillus and colon bacillus get into the water supply. I have great faith in the effectiveness of the bacteria found in the first three feet of the soil and I do not believe they get through by that route. In some parts of the country

I have observed that the open wells are often found in a common enclosure with the privy, pigpen, wood yard, poultry house, &c. The closets are all built without any receptacle for dejecta and the poultry walk freely about over the dirt and through the yard. It seems to me rather more than possible that poultry can play a very large part in the contamination of the barn yard well. They take as food almost any sort of organic material, they jump on the well curbing and defecate into the well, or shake the dirt from their feet and their feathers into it. If a deposit of intestinal discharge containing these bacilli is easily accessible to poultry, they must carry it on their feet or feathers, or in their bowels. Their health is not affected by having swallowed the typhoid germ, but the typhoid bacillus, having a congenial habitat wherever the colon bacillus is found, may pass through the intestines of the fowl and make its exit into the well, still capable of doing a great deal of mischief. This was one probable means of infection in the community I was studying. It occurs to me that much of the typhoid fever that occurs on farms may be conveyed in some such manner.

Dr. Stokes: I would like to say that I think Dr. Mattfeldt has made an excellent study of the cases of typhoid fever in his community. I understood him to remark that he thought this showed that the general water supply was to be preferred to polluted wells. That is quite true, but one should bear in mind that the source of general water supply should be well protected, since it is capable of more mischief when polluted.

Mr. Hartshorn: I would like to ask if in the case of long continued rains, where there is surface disposal of sewage might not the dangerous bacteria be carried down through the soil before the surface bacteria could dispose of it?

Dr. Stokes: The bacteria of the soil are very resistant and I should think not, unless in very extraordinary conditions of weather.

Dr. Stabler: It strikes me that this question of cess-pools is an exceedingly important matter. The remarks of Dr. Fulton and Dr. Stokes, and what has been said before in previous meetings of this association, show conclusively that any discharge of sewage matter into the deeper layers of the soil is contrary to the laws of health, inasmuch as it might pollute water supplies at a distance. It seems to me this association should make some effort to formulate legislation to prevent contamination of the deeper strata of the soil by human refuse. It is contrary to nature and should be contrary to law.

Dr. Councell: When these cess-pools are put down in Easton, it is usually done under the supervision of the proper authorities. Everything is done in a way that ought to render it perfectly secure, but after these pools become filled and need to be cleaned out, a crow bar is frequently brought into play, a hole knocked in the cement floor, and the water allowed to leak out. I know that this occurred near here, and that there is great danger connected with it, but there is much difficulty in getting the proper evidence of such a thing.

Mr. Penniman: There is one point in regard to Dr. Mattfeldt's paper I should like to call attention to, and that is that the wells of the towns to which he was alluding were all analyzed five years ago, and the owners notified that the water was impure and that there was danger of an outbreak of disease. They all replied that they saw no reason why the State Board of Health should send people out there to be disagreable. When the general water supply was put in and the cess-pits came into use, it was again found that the whole water supply of that village was contaminated. It seems to me the only hope of improvement in such cases lies in the direction of public education. It is beyond the law for the reason pointed out by Dr. Councell.

Dr. Rohe: Mr. Hartshorn asked a question which perhaps Dr. Stokes did not understand. The heavy rains would not facilitate the passing of bacteria through the first three feet of the soil, but the observations of Dr. Baker, of Michigan, fifteen or twenty years ago, have shown that heavy rains do wash down directly into the wells collections of bacteria that have accumulated during the winter. The answer given by Dr. Stokes was entirely correct that the bacterial layer of the soil is able to protect against the passing of dangerous bacteria, but these bacteria accumulating during the winter about the well are washed down when the first thaws and heavy rains of the spring occur. To Dr. Baker belongs the credit of explaining in this way the discrepancy between those authorities who believe that typhoid is caused only by the water supply being contaminated and those who believe it due to the rise and fall of the water supply.

Dr. Mattfeldt: In Baltimore county there is a special law enacted which provides that wherever water is drawn from a well for domestic purposes there shall be no cess-pit on the premises unless there is a water-tight box around it. That law is good so far as it goes, for where pump water is used the people can not have cess-pools, but an individual living on the adjoining place and who takes water from the general supply may have a cess-pool and can poison his neighbor's well.

AFTERNOON SESSION.

THURSDAY, NOVEMBER 10TH.

Dr. Edward M. Schaeffer, vice president, in the chair.

The Bacillus of Tuberculosis.

DR. W. ROYAL STOKES.

It is my intention to detain you only for a few minutes with a description of this germ. We have a number of microscope slides here which will demonstrate the germ, so I will simply remind you that the germ is a bacillus that belongs to the vegetable kingdom, and that it requires a magnification of 1,000 diameters in order to see it clearly. I have here a diagram showing the morphology of the germ when present in the sputum of a patient suffering with consumption. These germs are present at times in large quantities, and can be very easily stained and studied under the microscope simply by taking a small bit of the sputum, spreading it on glass cover slip and staining with certain dyes. This diagram shows the bacteria as seen under the microscope. The rod-shaped bodies are the germs of tuberculosis, and as you will see, these bacilli take up the stain in a very regular manner throughout their entire substance. Occasionally you may have germs that only take up the stain in portions of the body and thus give it a beaded appearance, which is typical of the bacillus of tuberculosis.

The blue bodies seen in the diagram are what we know as pus cells. You all know that the blood contains what is known as white blood corpuscles, which may leave the blood current in certain diseases and make an attempt to overcome the germs, generally by devouring them. This process can sometimes be seen under the microscope, and the effort of the pus cells or white blood corpuscles is the effort of nature to kill the germ and save the patient. Many of us are exposed to consumption at times and this very process, by which the white corpuscle makes this fight, may be what saves us from having the disease. These white blood corpuscles contain what we know as nuclei, as you see here stained more darkly. When these pus cells make an attempt to destroy a germ they throw out minute points or little projections, and the germ is attracted to them, so that eventually you find the germ inside the white corpuscle, and by a process of digestion the bacillus is destroyed. This is a picture one sees very frequently under the microscope when examining the sputum of a consumptive patient.

My main object will be to show you these germs under the microscope, but the fact that we find these germs in the expectoration brings out an interesting point to which I may briefly refer. Many, perhaps all of us, are exposed to consumption. It is believed that individuals are usually infected by means of the inhalation of the dried sputum of consumptive patients. Certain work has been done in the wards of hospitals that have been inhabited by consumptives. The dry dust has been infected by the sputum which gets on the floor and dries there. The dust of such a room has been collected and injected into the guinea pig, because these animals are very susceptible to consumption, and from the injection they have developed typical tuberculosis, showing that the germs of consumption had been deposited in the dust, had dried there, and although dried, were still in a condition to infect animals and, it goes without saying, human beings with consumption. Some late work, however, shows that individuals may be infected by another method. A german investigator has found that by spraying a fluid containing these germs in the face of an animal the latter will develop the disease, and he believes that consumptives very frequently infect healthy individuals by means of the fine spray formed in coughing or even in loud talking.

The main point to be borne in mind in regard to the germ of consumption is the fact that it is present in the sputum of consumptive patients, and that from this sputum healthy individuals may be infected.

Dr. Schaeffer. You have the opportunity this afternoon for the demonstration to your own credence that germs are not a creation of the doctor's imagination, but that they are living things and that you can do more for yourselves by preventing consumption than the doctor can do for you. You will easily see how these things touch upon school matters. The theme is quite as important, and I think most physicians would say more important, in the extent to which it reaches the average individual, than the subjects so much discussed, the use of tobacco and alcohol.

Tuberculosis in School.

Dr. Jos. E. Gichner.

At first I wish to make several points clear. Tuberculosis must not be regarded only as a disease of the lungs, for its presence and manifestations are various. The thing that we have called upon as scrofula, is nothing more than a local tuberculosis of the glands. The disease commonly called Pott's disease, or caries of the spine, is only a tuberculosis of the spinal bones. Hip-joint disease is another of its forms, and other diseased conditions are recognized today as caused by the ever-present bacillus of tuberculosis. In speaking of tuberculosis in connection with the schools we find that children are less apt to be affected by tuberculosis of the lungs than by tuberculosis of the other organs, bones, glands, etc., according to the means of access, the resisting power of the child and the virulence or activity of the bacteria. These diseases are universal. In the country here you may not observe them so often, but in the cities where the schools are crowded with pupils who manifest these various phases of tuberculosis we have many instances where we can see the beginning and the conclusion of the disease.

The prevalence of it is not conclusively shown in the vital statistics or the health reports. Some of these diseases were not in the past recognized as due to the tubercle bacillus, and many people are ashamed or afraid to report the existence of consumption. In fact it is good form now to call these different diseases "tuberculosis" because it sounds less formidable than "consumption."

Dr. Stokes has told you that the sputum of a tuberculous patient is infectious to other people. There are also other sources of infection, such as the discharge from a tuberculous abscess in the glands or in the bones. This discharge has been shown by inoculation experiments to be infectious, and in that way the universality of tuberculosis has been established.

It is a well known fact that these germs are very broadcast, and one is led to ask how it is that so many people escape infection? We know that the healthy organism, the healthy tissue, being made up of healthy cells, is capable of resisting them, or has what we call vital resistance. So long as the mucous membrane is healthy the entrance of germs in small numbers means very little to such an individual. His white blood cells are capable of making the fight. These white cells go out of their usual way seeking the bacillus and destroying it. To explain how this occurs let us consider an individual infected with a common pus organism. Soon after the infection there occurs a swelling. What does it mean? It means that there is a large number of white corpuscles collecting to overcome the bacteria; soon there is pus formed, the pus escapes, the wound heals and there is health again. Given a child with inherited weakness, or who has just got over some disease, there is a reduced power of resistance, and if that child is infected by tubercle bacilli he will, unless placed under very favorable surroundings, break down before the very rapid progress of the disease. If well cared for the little patient may survive, for it is often a slow disease, unless there exists at the same time an infection from some other organism, such as that of the typhoid fever, scarlet fever, measles, or pneumonia, when the combined diseases are more formidable.

Another mode of infection occurs through the medium of milk, and this is a common source of infection, especially among children. This may be brought about by the drinking of milk obtained from tuberculous cows.

Now what are the symptoms in a child showing first a tuberculous tendency, and then infection? When you get a child whose pronunciation is bad, whose use of the letter L is not good, it shows that the condition of the throat or nose is not good, that there is probably a diseased tonsil, or a new growth in the throat and we know that such a child is predisposed to tuberculosis. Of course he is liable to other infections also. Such a child should be sent home for proper care, for he needs medical attention. A half a year or even more time spent in getting his mucous membranes in good condition to resist the germs would be time well spent. People are very negligent in the matter of expectoration, and dust containing tubercle bacilli is everywhere. If a delicate child inhales it, his glands become infected, sometimes so slowly that it is scarcely noticed until he develops fever. Sometimes the disease may be detected in schools by the fact that certain calisthenic movements are painful. The introduction of exercise into the public school course is a good move in the way of detecting disease.

We can do so much more in preventing this disease than in curing it, that I want you all to know how to recognize it. There will likely be loss of flesh and appetite, perhaps slight temperature in the evening, and disinclanation to play. Then is the time to send the child out of school. We know that all these forms of disease are tuberculosis, that the disease is communicable from man to man, from man to animals and back again, and that nature has put a remedy in the human system to overcome the disease if we but give nature a chance.

In the first place, the best means to overcome the disease is not to have the germs around. I must pay my tribute here to Col. Waring for one of the most humanitarian, and one of the most benevolent works he established, and that is thorough street cleaning. Clean streets mean healthy schools, and healthy people in general. He diminished the death rate in the dirtiest district of New York to an enormous extent, and we may take a similar lesson from the recent war, in the work accomplished by Dr. Wood at Santiago, where he reduced the number of cases of sickness to one-fourth what they had been. The second point is public education. The people must understand the dangers of infection from sputum, and that the danger can be destroyed by burning infected sputum, or by the use of some chemical agent, and thirdly, we should so provide for our school children, proper outdoor exercise and good food, so that they will not become susceptible to the disease.

I was a consumptive myself. I inherited a tendency to the disease, have had the loss of flesh, rise of temperature, and even hemorrhage, but I lived an out of door life for six months, and I believe I am thoroughly cured. If we take a little animal like the guinea pig, inject him with tuberculosis, and put him in a dark place, the disease progresses very rapidly, but inject another with the same disease, give him good air and good food, the disease is slow, and if we inject a third animal and let it go free where it gets plenty of fresh air and exercise, the chances are it will recover entirely. I do not advocate children spending most of their lives out of doors, but every moment that a child who has this disease spends in God's sunshine, is so much time given to its cure.

If you take away with you only this much from my talk this afternoon, first, that all of these forms of the disease are tuberculosis, second, that the disease is caused by this bacillus, third, that it is distributed everywhere, fourth, that it is a curable disease by very simple means, and fifth, that it is preventable by taking care of the discharges of those having the disease, I shall have accomplished all I desire.

DR. W. S. THAYER: There is very little to add to what Dr. Gichner has said. There are one or two points, however, that suggested themselves to me while the doctor was speaking. He said in the beginning of his talk, that physicians hesitated to report cases of tuberculosis, and seemed ashamed to do so. That opens up the question of the advisability of reporting cases of tuberculosis, which I believe is not now compulsory in Maryland. I must say I feel that the time will come, if things are well conducted, when tuberculosis will be reported, and when great advantages will come from the report of such cases to the health department. It may not be disgressing too much from the subject, however, to say a word about the dangers of going ahead too rapidly. About two years ago, in conversation with a physician of a northern city, I was amused to hear him say, with a smile, that he hadn't had a case of tuberculosis in his practice in two years. I asked what he meant, and he replied that the health department in his city made it compulsory to report tuberculosis, and immediately upon receipt of the report, they sent around to the family a large bundle of printed matter, telling them what they must do. He said it sometimes got into the hands of the patient before he was ready to tell him that he had such a disease, and consequently he had ceased to report such cases. It shows that bad results may come about through means that were intended to be helpful.

There is one other point that perhaps may be too much of a digression but which I would like to mention in a cursory way, that is the great need everywhere in this country of sanitaria for the treatment of cases of tuberculosis, especially in their incipiency. We know the advantage of treating such cases in certain high and dry regions in Colorado, Asheville and other places in this country, but everybody does'nt recognize that the results are but little if any better than might be obtained in any good hill region where the patients are well cared for and made to lead a proper life, being out of doors a part of the time, well fed and properly clothed. A very great many lives might be saved by the establishment of sanitariums near our large cities. I had the good fortune to hear this subject discussed last year in Moscow, and heard some earnest pleas made by prominent German authorities for just this sort of thing.

Dr. Fulton. It seems to me of sufficient importance to repeat a little of what Dr. Gichner said from another standpoint, that is to insist upon the unity of all tuberculous processes, for white swelling, spine disease, King's evil, scrofula, are all tuberculosis. That knowledge does not seem, however, to have spread very far even among the medical profession, for since I have been receiving reports upon vital statistics, quite a number of deaths from scrofula have been reported.

There are many hopeful things about the outlook for the prevention of tuberculosis. The patient can take care of his sputum or other discharges that carry the bacilli. He doesn't need to be dealt with like a patient with small-pox. The placarding of houses in such cases is to my mind undesirable.

The possibility of handing the bacteria around in the moist state was referred to, but I want to speak of one mode of its conveyance. Almost every person who coughs or sneezes has the habit of putting the hand before the mouth at such a time, and when he shakes hands with a friend soon after there is a good prospect for passing the bacillus from one to the other.

We know now that there are now three sorts of bacilli, which originally sprang probably from the same stock; the tubercle bacillus that lives in the blood of the fowl at a temperature of 102 degrees Farenheit, the bacillus that lives only at the temperature of mammals, and the bacillus of the fish, which grows at a much lower temperature. These are still convertible, however, from one to the other class. The tubercle bacillus has access to us then by routes that none of us can quite securely watch, but such channels as infected milk or meat should be guarded by the law.

Dr. Schaeffer. Perhaps most of you know that the State Board of Health issues pamphlets giving information to teachers and to the public in general as to the prevention of these diseases. By the education of the young I think we have the most feasible means of accomplishing our purpose.

Papers were also read by T. A. Conncell on "Practical Difficulties in the Collection of Vital Statistics," and by Dr. John S. Fulton on "Recent Public Health Legislation in Maryland."

Adjournment.

EVENING SESSION.

Thursday, November 10th.

The meeting was called to order by the vice-president, Mr. Hartshorn.

A Lecture upon Malaria, with a Demonstration.

Dr. Wm. S. Thayer.

Mr. President, Ladies and Gentlemen:

To deal with a subject as large as malaria in an hour's talk is rather a difficult problem, and I trust that you will pardon me for the necessary incompleteness of my remarks. It has, however, seemed to me, that it might be of interest to this association to hear a few words treating particularly of the nature of the disease and the relation of its manifestations to the parasites which have been shown to be the exciting cause. It may also interest you to learn a little concerning recent observations which have been made with regard to the manner in which the disease is acquired.

That fevers, commonly associated with chills, which show a marked tendency toward periodicity, are common in warm, swampy and marshy regions, has been known for centuries; and with the introduction of quinine* in the seventeenth century, it was discovered that a large class of these fevers responded immediately to treatment by this drug. That the term "malaria" became applied to this affection, is an interesting indication of the views held by old observers as to the manner of origin of

*The crude cinchona bark was then used.

the disease. The word "malaria" represents the two Italian words "mal'aria" signifying bad air.

But while the term was at one time limited to fevers which yielded to treatment by quinine, it has since been applied in a general way to all sorts of febrile and non-febrile conditions, many of which have, in reality, nothing to do with the clearly defined disease which we now know as malarial fever. To complain, as is so common, that we suffer from "malaria" when we are tired, or have headache, or are "run down" from overwork, is about as rational a proceeding as if we were to say that we had small-pox or diphtheria or measles. Malaria is, in fact, a disease as sharply defined and as easy of diagnosis as any of these affections.

For many centuries, indeed from a period before the Christian era, malaria has been supposed to be due to some animal or vegetable poison which entered the body with the drinking water or the respired air. But it was not until 1880 that the existence of a parasite causing the disease was definitely proven. Laveran, a French army surgeon, at that time stationed in Algiers, discovered that the blood of patients suffering with malaria contained living organisms which developed within and at the expense of the red corpuscles. He considered himself justified in assuming that these parasites were the cause of the disease, because they were invariably present in patients suffering from the affection, and never found in other individuals; and further, because they disappeared rapidly, and synchronously with the subsidence of the symptoms of the disease under treatment by quinine. Five years after this, Golgi, in Italy, followed later by a number of other observers, described the life history of these parasites within the circulation. Studies in Italy, America, Russia and Germany, since then have shown that there are three distinct varieties of the malarial organisms; one in which the parasite passes through its complete cycle of development in about seventy-two hours, the *quartan parasite;* one in which the cycle of development lasts about forty-eight hours, the *tertian parasite;* and one in which the cycle of development is more or less irregular, being completed sometimes within twenty-four hours, in other instances extending over a period of forty-eight hours or even more. This parasite, which is associated with fevers which in temperate climates occur during the later summer and fall, has been called the *æstivo-autumnal organism.* The several types of parasites have certain morphological differences which are easily recognizable by the skilled microscopist.

The tertian and quartan parasites in their youngest forms are represented by small colorless, hyaline bodies which lie within the red corpuscles. These bodies show active amœboid movements. As they increase in size they develop small dark brown pigment granules, which are thrown into active motion by the undulations of the protoplasm of the parasite. The pigment is developed apparently from the disintegrated substance of the red blood corpuscle. Eventually at the end of 72 or 48 hours, according to the variety of the parasite, the red corpuscle is entirely filled by the organism which is now ripe for sporulation. The pigment then gathers into a small clump or block at one point, usually in the middle of the parasite which breaks up into from six to twenty or thirty small clear hyaline bodies. These are more numerous in the tertian than in the quartan organism. The red corpuscle having been entirely destroyed, the clear hyaline segments, which apparently represent young parasites, are set free in the circulation, and are ready to attack other red blood corpuscles. Golgi first pointed out the remarkable fact that in infections with the tertian or quartan parasite the organisms are present in great groups, almost all the members of which are at approximately the same stage of development. Thus in infections with one group of the tertian parasite sporulatian of the entire generation occurs within a period of a few hours every other day; in infections with the quartan parasite within a few hours every fourth day. The æstivo-autumnal parasite passes through a cycle of existence similar to that of these other organisms, with the exception of the important difference that the tendency toward arrangement in groups is much less definite, the parasites frequently being present in the blood in all stages of development.

Not all mature parasites, however, undergo sporulation Some are observed to break up and become disintegraded, while others show an interesting change, which has given rise to much speculation and inquiry. From the full grown bodies there develop suddenly a number of actively motile filaments which thresh about among the surrounding blood corpuscles, and not infrequently break loose from the mother cell rushing through the field with lively serpentine movements. These filaments have been called flagella. What is their significance? Two main views have been held. On the one hand, they have been considered stages in a degenerative process; on the other hand, some observers have believed that they represent forms in the life history of the parasite destined to preserve its existence under conditions other than those with which it meets within the human body. This is a view which from analogy with what we know of other similar parasites is not unreasonable. It is well known that some parasites after having passed through their ordinary intra-corporeal cycle of existence, develop forms which, while within the host which they then occupy, are sterile, but which are capable when, owing to the death of the host, or from any other reason, they reach another medium, of undergoing further development, representing then the first stage of a second extra-corporeal cycle of existence of the organism. I mention these possibilities now, for I shall come back to the subject later on in connection with some recent studies.

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Interesting as are these facts with regard to the constant presence of the parasite in patients affected with malaria, one would naturally ask further:

(1.) Where and how do these parasites exist outside of the human body?

(2.) How do they obtain entrance into the body; in other words, how do we become infected with malaria?

In answer to the first question, we can only say "We do not know." Analogy, however, with what we know of other parasitic organisms justifies us in believing that the form in which the parasites live outside of the human body is entirely different from that which they assume after they have entered.

With regard to the second question, "How does infection take place," there has been much speculation. Three main ideas have been held:

(*a.*) That infection occurs through drinking water.

(*b.*) Through the inhaled air.

(*c.*) Through the bites of insects.

The theory that infection occurs through drinking water is old and time honored, and yet, not only is the positive proof wanting, but there is considerable evidence against this hypothesis. The diagnosis of malaria is often unfortunately, even today, very loosely made, and when we examine the evidence advanced in favor of the water-born theory of the disease, we find that much of what has passed for malaria is undoubtedly typhoid fever which, as we all know, is only too frequently acquired in this manner.

Furthermore, many experiments have been made which tend to throw discredit upon the water-born theory of the disease. Marchiafava and Celli, Mariotti, Ciarocchi and Zeri have all tested the question by the administration of water from the most malarious districts about Rome by the mouth, by the rectum, and as a spray to individuals who have voluntarily subjected themselves to the experiments. But though the experiments were in some instances continued through long periods of time, in all cases the result was absolutely negative. Grassi and Feletti administered dew collected from the most malarious districts, but without effect. They even went so far as to drink fresh blood from an infected individual, blood which, if introduced hypodermatically, will always cause a transferrence of the infection.

After all this, it is but rational to conclude that it is unlikely that infection occurs through the normal gastro-intestinal tract. This does not mean that the parasites may not exist and develop in stagnant water, entering the system in other ways. Indeed, there is some reason to think that this may possibly occur.

One of the oldest theories in connection with the disease has been that infection occurs through the inspired air, and while no positive proof can be advanced in its favor, it is hard for most of us to completely abandon this theory. Many instances of malaria occur when almost every other method of infection can be ruled out. Yet as has been before said, evidence proving that infection occurs through the lungs is wholly wanting. Of late years there has been a strong tendency to return to an old idea, namely, that the infection in malaria may occur in many instances at least, through the skin, the parasite being introduced by the bites of some suctorial insect.

As a matter of fact a sufficient number of individuals have subjected themselves to the experiment to prove that the disease may always be transferred from an infected individual to a healthy man by intravenous or hypodermatic inoculation of blood. The same type of fever and the same variety of parasites always are reproduced in the individual who is inoculated.

But especially interesting is the fact that within a few years several diseases in the lower animals which depend upon the presence of a parasite in the circulating blood have been shown to be transmitted by the bites of insects. Thus Professor Theobald Smith, of Boston, at that time connected with the Bureau of Animal Industry in Washington, showed that Texas fever in cattle is due to the presence in the blood corpuscles of a parasite closely similar to that of malaria; and this parasite is transferred by means of the cattle tick. A disease of animals in Africa known as Nagana is due to the presence in the blood of a parasite which is transmitted by the bite of the Tsetse fly.

In man suspicion has fallen upon the mosquito, and indeed, there is much evidence which goes to suggest that the mosquito may play a part in transferring the malarial infection. In the first place mosquitoes invariably exist in malarious regions, and the malarial fevers are more prevalent at those periods when the mosquitoes are most abundant; they are especially numerous in the regions about swamps and marshes where the dangers of infection are greatest. In a malarious district there is greater danger of infection at about sundown and at night, but sunset and night are periods at which mosquitoes are highly active. The dangers of infection are greater near the ground than in elevated positions; but mosquitoes are more numerous near the ground. The danger of infection is greater on quiet nights than in windy weather; but wind is particularly unfavorable to the mosquito. Emin Pasha was so convinced that the bite of the mosquito played an important part in the aetiology of malarial fever in Africa that he always travelled with a mosquito net, and escaped the disease. Bignami, further, has noted that in certain parts of Italy workmen who live in conical huts, with a hole at the top, through which the smoke of their little fire passes, are unusually free from the disease, while those about them may be almost universally affected. Of course the presence of smoke is one of the surest protections against mosquitoes.

Koch, who last year devoted some months in Africa to the study of malaria, was strongly impressed with the probability of this hypothesis. He says: "The more I study this disease the more I incline toward the opinion that the latter" (transferrence of the infection by means of the mosquito) "is the main, probably the only method." Wherever one goes he finds tropical malaria and the mosquito present together. On the coast (in East Africa) there are several places which are free from the disease. One of these is the Island Chole, which lies upon the southern extremity of the Island of Mafia. "This is the only place on the coast where I could sleep without a mosquito net. In the mountains malaria stops at exactly that point where no more mosquitoes are to be found. Inland malaria diminishes together with the mosquitoes. At those times of the year when there are many mosquitoes malaria is more severe." The natives of Usambara mountain often acquire the disease when they descend to the low lands. They believe it to be due to the bites of the mosquitoes, and call the disease by the same name which they give to the mosquito—"Nbu." Koch is, however, especially impressed by the analogy with Texas fever and other diseases of animals in which the parasites exist exclusively in the blood.

This is an interesting and seductive hypothesis. If we pursue it further we are immediately confronted with the question: How may the parasite enter the mosquito and how may the mosquito introduce it into the human being? There are many possibilities in this connection. Let us consider what occurs in some other parasitic diseases. In Texas fever it is not the adult tick which transfers the parasites from one animal to the other. The adult tick feeds upon the parasites which infect the blood the parasites, living in some form within the tick, are transmitted to its descendants, and it is only upon being bitten by one of a new brood of ticks that infection is acquired. Another way in which insects may assist in transferring the disease is shown by the behavior of the mosquito and the filaria sanguinis hominis.

This nematode has been shown by Manson to enter and live within the muscles of the mosquito. The mosquito, dying, often infects water which, if ingested by human beings, conveys the contagion.

Manson some years ago advanced the idea that the mosquito might form an intermediate host for the malarial parasite as well as for the filaria, and that if mosquitoes were to bite infected individuals the organisms might continue to live in some form within the body of the insect, and being set free upon its death, contaminate drinking water.

Beyond the fact that the development of flagellate bodies has been noted in blood contained within the stomach of the mosquito, and that Ross in India has noted, in several instances, curious pigmented bodies in the stomach wall of some insects which had been fed upon the blood of infected individuals, no confirmation of this hypothesis has as yet been obtained from the examination of human blood.

Recently, however, observers have turned their attention toward the parasites in the blood of birds. Birds are subject to infection with several varieties of organisms which are very closely analogous to the malarial parasites of men, and inasmuch as experiments of various sorts, impossible with the human being, may be readily carried out with birds, this field has seemed a particularly hopeful one for investigation.

Two years ago two of our students, Mr. Opie and Mr. MacCallum, made some interesting studies upon the blood of birds, confirming the observations of several other foreign students, and noting certain further, as yet, undescribed features in the avian parasites. And last summer Dr. MacCallum was fortunate enough to discover what is partial proof at least of Manson's hypothesis with regard to the flagella. While studying a certain variety of parasite in birds' blood he noted that whenever flagellation occurred some of the filaments, breaking loose from the mother body, rushed across the field to other full-grown parasites, parasites which Dr. Opie had previously noted were apparently incapable of flagellation. Single flagella might be seen to penetrate these full-grown forms. Only one flagellum ever succeeded in entering, though sometimes bodies of this nature might be seen surrounded by three or four filaments which would butt their heads against them and, apparently, endeavor in every way to force an entry. Shortly afterwards the body which had been penetrated changed its shape into a long pointed element, the pigment gathering at one end; it then became motile, advancing steadily across the field, destroying with its sharp point any red corpuscles which were in its way. These elements had previously been described by

Danilevsky under the name of "pseudo-vermicules." This remarkable process which has been repeatedly observed can, from analogy, scarcely be other than an act of fertilization. The discovery may be said to have definitely shown that the flagella are not degenerate bodies. The further fate of the pseudo-vermicules MacCallum was, however, unable to discover. He is inclined to suspect that they may be forms capable of development under other conditions than those offered in the body of the bird. There are numerous analogies in natural history which tend to support this view.

Within the last year, Ross in India has carried out some excessively interesting studies which bear directly upon the manner of infection. Ross noted that the process of flagellation might occur in avian parasites as well as in those of human beings within the stomach of the mosquito. Furthermore, he noticed, when working with a peculiar variety of the mosquito fed upon birds infected with the proteosoma (a special variety of parasite) that a certain length of time after feeding, curious large pigmented bodies began to appear in the walls of the mosquito's stomach. The pigment of these elements was clearly derived from that within the parasites which had been taken into the body of the mosquito. These structures which appeared in crops after every feeding of the mosquito upon infected blood, were observed to increase gradually in size, until finally, at the end of six days, they reached a very considerable diameter, nearly ten times that of a red blood corpuscle. At this time, according to Ross, they protrude from the walls of the stomach into the body cavity of the mosquito. In some full grown forms a curious radial station was noted.

Later Ross found that in cases where the large elements had ruptured, the body cavity contained great numbers of small spindle-shaped, rather flattened structures which he was able to prove, had escaped at the time rupture of the mother body; to these filaments was due the striated appearance above noted. After their escape from the mother body, they circulate in the insect's blood. Ross also discovered the presence of two glands in the thorax of the mosquito, which consist of a number of plump cells arranged about ducts, which finally unite, forming a common trunk opening into the proboscis—salivary glands, which probably convey the poison of the insect. In the cells of these glands numbers of the filamentous bodies become accumulated. Suspecting that it might be by means of these structures that the infection was carried from mosquito to bird, he exposed healthy birds to the bites of insects which had been fed upon infected birds at a period such that the filamentous bodies must be present in the salivary glands. The experiment was brilliantly successful. Ross was able in almost every instance to produce an infection considerably more severe than was the rule in birds where the source of the infection was unknown. Indeed, some of the birds died of the disease—an unusual result.

If then Ross' observations are accurate, we have at last the demonstration that a parasite closely similar to the malarial organism in man may have two cycles of existence—one within its warm blooded human host, and one taking place within the body of the mosquito which serves as an intermediate host, being capable later of actually transmitting the disease from infected to non-infected individuals.

And when we follow these observations step by step, we cannot fail to be led to believe that the first stage in the process is fecundation as observed by MacCallum. Ross has not, as yet, reported the manner of entrance of the parasites into the stomach wall of the mosquito; but when we remember the extraordinary behavior of the pseudo-vermicule which arises from the fecundated parasite—its sharp point, and the manner in which it is capable of piercing and destroying everything in its way—it would seem almost more than probable that it is in this stage that penetration of the intestinal wall takes place.

Not the least interesting point brought forth by these observations is the suggestion that a patient infected with malaria may be through the help of the mosquito a source of contagion to those about him.

* * *

I have already spoken of the fact that three distinct varieties of the malarial parasite have been described. It is interesting to note that these three varieties are each in turn associated with a definite type of fever. The quartan parasite, it will be remembered, has a cycle of existence lasting about seventy-two hours, and further possesses the remarkable characteristic that it is present in the blood of infected individuals in great groups, all the members of which are approximately at the same stage of development. Thus, in infections with a single group of organisms, sporulation occurs at intervals of seventy-two hours or every fourth day.

It has been shown that the paroxysm in malarial fever is always associated with the sporulation of a group of parasites, so that in such an infection the chill occurs every fourth day. There is reason to believe that the immediate cause of the paroxysm is some poisonous substance set free by the parasites at the time of their sporulation.

The tertian parasite, as has been said, has a cycle of existence lasting about forty-eight hours, and here, in infections with a single group, sporulation and the resulting paroxysm occur every other day. The tertian parasite is the commonest variety in these regions.

But you may perhaps say that the commonest form of ague in Maryland is that in which chills occur daily. How are we to explain this? Very simply. In the majority of instances two groups of the tertian parasite are present; one segmenting on Monday and Wednesday, the other on Tuesday and Thursday, the result being a chill daily. The same may and does occur in infections with the quartan parasite if three groups be present; while in some instances in infections with two groups, chills may occur on two successive days, with a day of intermission between.

Rarely infection with multiple generations of the tertian and quartan parasite occur, resulting in irregular fever. It is curiously enough, rare for two groups to segment upon the same day.

The result of all this is that in infections with either of these two varieties of parasites the symptoms are remarkably regular and periodical.

This is not the case in infections with the æstivo-autumnal organism. Here the cycle of existence varies very much in different cases, oscillating all the way from twenty-four to forty-eight hours or even more. In addition to this, the tendency to the arrangement of the parasite in groups is also much less marked. So that while regular paroxyms *may occur* at intervals of twenty-four or thirty-six or forty-eight hours, the fever is often irregular or continuous. This is the form of parasite which is associated with the so-called remittent fevers which occur at the height of the malarial season.

It may not be amiss to say a word before closing with regard to the amenability of these different forms of fever to treatment. All types of malaria yield to treatment by quinine. One may meet with malignant infections so severe that death occurs within twenty-four or forty-eight hours before quinine has had the proper time to act, or where the paroxysms which have occurred have resulted in such injury to the human organism, that despite the disappearance of the parasites death may ultimately follow. But the infection always yields to quinine. Relapses, however, may and frequently do occur. There are many individuals who treat themselves with a few doses of quinine at the time of their paroxysms who have, at more or less regular intervals of one, two or three weeks, recurrences of the infection. This may go on for months or years, resulting in very material danger to the health and constitution of the individual. But the immediate attack will always yield rapidly to quinine, and if treatment be properly continued the danger of relapses is slight. It is perfectly safe to say that any fever in these regions which does not break after four days treatment by quinine, properly administered, is not simple malaria. I have seen cases of malaria in which slight fever, strictly speaking, lasted longer than four days. Occasionally in severe cases a slight elevation of temperature may last for some time after the infection has disappeared. But the marked manifestations are always broken within a few days. It is a *fact* that that *continuous fever non-resistant to quinine is not malaria*, and observations with modern methods are showing us that the great majority of the cases which have been previously classed as malarial fevers resistant to quinine are really instances of typhoid fever.

But I have already taken more of your time than I had intended to, and I will sum up with a few general conclusions.

(1.) Malarial fever is a specific infectious disease due to parasites which exist in the blood of the infected individual in great groups, and give rise to paroxysms at the periods of their sporulation.

(2.) There are three varieties of malarial parasite; one associated with quarten fever, one with tertian and one with paroxysms which occur usually about forty-eight hours apart, but occasionally at more frequent intervals, while often the fever is irregular or continued, the æstivo-autumnal parasite.

(3.) Either of the first two varieties of parasite may also give rise to quotidian fever, owing to the presence of multiple groups of organisms undergoing sporulation on successive days.

(4.) The paroxysms, in infections with the tertian and quartan parasites, are usually regularly periodical in their time of onset. In infections with the æstivo-autumnal organisms they are often irregular and associated with continued fever.

(5.) We do not know how the parasites live outside of the body or how infection takes places.

(6.) Experiments tend to show that it is improbable that infection occurs through the gastro-intestinal tract. It is possible, though not proven, that it may occur through the respiratory apparatus or through the skin, being introduced by the bites of insects, especially the mosquito. By analogy with what occurs in similar infections in birds it is not improbable that the mosquito may play the part not only of an intermediate host of the malarial parasite, but also of a direct transmitter of the infection from one individual to another.*

(7.) Quinine properly administered is a true specific against the disease.

(8.) Relapses may occur after weeks or months, but they are in turn amenable to treatment.

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*Since the delivery of this address, studies by Grassl, Bignami and Bastianelli in Italy, with the parasites of human beings, have entirely confirmed the observations of Ross on the parasites of birds. The entire extra-corporeal cycle of existence of one of the human malarial parasites has been followed within the ntestinal wall of the mosquito, and infection by means of the bites of mosquitoes has been produced.

MORNING SESSION.

FRIDAY, NOVEMBER 11TH, 1898.

The meeting was called to order at 10.30 o'clock by the vice-president, Dr. Edward M. Schaeffer.

On motion of Dr. Fulton, seconded by Mr. Hartshorne, a committee was appointed to wait upon the County Commissioners and urge upon them the need of a ladies' toilet room in the new courthouse under construction. The committee was instructed to protest against any modification of the architect's plans in this particular. The motion was unanimously adopted.

The Sanitary Supervision of Schools in Small Communities.

BY DR. S. J. FORT.

The child as a unit should be studied by four people—the doctor, the teacher, and *both* parents. This study is to be divided into two parts, both equally important, each hinging on the other:

First. The child as a physiological unit.

Second. The environment of its mental development.

I am inclined to think that it is possible to do too much studying of the child, I mean to carry it as far as our friends, the psychologists, carry it; the practical work done on this line years ago by Froebel and Pestalozzi is to my mind of far more importance to the child itself than the closer, more microscopical dissection of its mental actions done by later observers, very useful perhaps in its place, but in danger of being carried too far, impressing the child with too large a sense of its own importance.

Proper repression of the ego, development of fixed ideas as to the laws of *meum* and *tuum*, development of a love for right because it is right, and development of a proper respect for personal cleanliness, represent the moral results for which educators are striving, whether psychologists or just plain every day child-students. When we shall come to fully realize that a system of education must be made to fit the child, not the child made to fit the system, we shall have attained very considerable progress.

This much can be said of the work done by Hall and others working in psychology; it seems to have proven very conclusively that the mind develops according to certain laws, as does the body; that mental growth is parallel with bodily growth, and that whatever hinders either interferes very materially with the other. We are gradually grasping the idea that this mind cannot be properly trained by a system of mental gymnastics, and that time is well spent in training the body.

The functions of the parents, as child trainers, are to learn the principles of hygiene as applicable to the child in its home life; how to feed the child, and this includes a knowledge of how to cook its food properly, as well as to know how to make up proportions of proteids and carbo hydrates for the various ages. It means a knowledge of the proper amount of sleep, of how to dress growing children, and ability to secure obedience to parental authority. The functions of the teacher are not easy to state. These patient and, as a rule, hardworking people, are handicapped with what are termed school boards, and these are of two varieties, State and local, both of which are inclined to placidly revolve in the comfortable ancient ruts, deaf to criticism, and unwilling to keep step with modern progress.

The experienced teacher has a desire to work intelligently with children, but a cast-iron schedule of studies bars the way, strangles originality, and hinders individual development. The children must fit the schedule; if they do not, so much the worse for the children. As a rule, teachers are anxious to learn, as witness the large membership of teachers in this association. No one knows better than they the crying need for reform. While the relation between the doctor and the teacher has not always been as intimate as it ought to be, yet teachers are beginning to see that the medical man is really working to enable the teacher to do more work in less time, and with less wear and tear of brain cells. In some communities the teacher dare not raise a voice against hygienic evils that are too rank to mention, lest he lose his job for being too particular. One can hardly blame a teacher for overlooking the physical condition of children, when salary is sure to stop as soon as his daily roll-call falls to a certain number. When irate parents want to know why a child with only a little sore throat should be sent home, it is not hard to understand why the teachers are apt to perform their duties according to schedule, and to do no more than the law directs, and why they are not as cordial with the doctor as they might be.

The functions of the medical inspector cover a lot of ground. In the first place, he must know how to build a school house; how to secure proper lighting, ventilation, and heat supply; how to arrange desks and seats; proper adjustment of window space to floor; cubic air space to each child; provision for playgrounds, and water supply. Professional men have already reduced most of these matters to a science, but how to get our school boards to believe as we do is a problem worthy of a modern Solomon.

The idea that a playground is an absolute necessity is only recently taking shape. Usually it is an accidental adjunct to a school house. As a rule it is the space left to give light when the house is erected. Instead of buying enough land to give each child his proper play area, the building occupies the best part of the lot, and the children get the remainder if there is any. Is it any wonder that the play instincts of the country child are dwarfed and misshapen?

The hygiene of study hours, of meal hours, of recreation, the physical fitness of the child to study, his eyesight, hearing, the resisting powers of each sex at different ages, demand the attention of an expert. This brings me to consider how this sanitary supervision can be brought about. It is a trite but true saying that what is everybody's business is nobody's, and while every medical man in every community is interested in hygienic reform, reform means constant agitation that will wear away prejudice and apathy, and this means time, of which the general practitioner has none to spare.

The local health officer, receiving a few dollars as a yearly stipend, has all he can do to look after cases of infectious disease. Earning his so-called salary several times a year, doing only what the law requires, he has not time for such specialized work as examining schools. A plan that might work well would be to pass a law making it compulsory to place a physician on every school board, and to appoint a medical inspector of schools for each election district. These inspectors should visit each school in the district at least once a month during the school term, and should be responsible for the vaccination of every child. They should report monthly to their chief, the medical member of the board, the number of children sent home, with the reasons, the number of vaccinations and the results, the sanitary condition of the school houses and their surroundings. The various details of duty would of necessity need frequent re-arrangement until time and experience made it possible to crystallize them into permanent form.

The medical member of the school board, whose authority in all matters pertaining to hygiene in its broadest sense should be paramount, should be paid an adequate salary.

In conclusion let me mention one point that has not been duly recognized. That is the early recognition of backward and mentally deficient children who might be graded together in special schools. This is being done abroad, and we are several years behind the times in not recognizing the right of a backward child to a specialized training and education. Many of these boys and girls are to be found in our public schools, where they are a drag and after a while a nuisance. They leave school, go on the streets, and having a certain amount of instinctive shrewdness, gradually drift into the vast army of juvenile criminals.

The Water Supply of Schools.

By Mr. A. E. Mullikin, *of Easton.*

Mr. Mullikin said, in part: There are perhaps a great many more dangers in this connection than we are accustomed to recognize. Children are much too familiar with each other for their own physical welfare, and disease germs possessed by one or a few may quickly become common property. This contact becomes unhealthfully close. They are too indiscriminate in the use of utensils of all kinds—the same drinking vessel especially. While some may endeavor to become cleanly, it is extremely seldom that prudence is exercised. How easy it is for a throat or any contiguous cavity affected by disease to leave its traces upon a drinking vessel, and how likely is the next thirsty person to become recipient of his partner's malady.

The material of the drinking cup should be as little porous as possible, and it would perhaps be justifiable to compel each one to possess a cup, and to forbid lending.

The use of a bucket should not be encouraged unless there be more than ordinary excuse for its presence. It encourages children to drink upon slight impulse, perhaps as an excuse for leaving the seat. Presuming that the liquid is carefully drawn and that the vessel has no impurity in its pores or clinging to it, the water becomes worse every minute of its standing. If exposed to the atmosphere it constantly appropriates to itself the dist particles and infecting matter of the air. A cover would afford some protection at times, but a dangerous exposure is inevitable unless something similar to a well sealed cooler is used, and this would be likely to retain its contents to the point of stagnation. Here too the cup is not admitted to the cleansing effect of an abundant flow.

The basin, towel and soap for common and indiscriminate use, whose station is often near to that of the bucket, are another source of apprehension in view of the great variety of skin contagious diseases. Those pupils who spend a number of hours at school taking their luncheon with them should have each at least a separate towel.

The best hygienic safeguard for any school is interested co-operation with the children, resulting from convincing them, gaining their sympathy and arousing their determination. Fully explain to them the dangers to be avoided, and then persuade them into preferring the protection and respect of self to the gratification of reckless instinct, and they will conform intelligently to the regulations imposed. Endeavor to make their habits self-respecting, especially urging that the mouth, throat and stomach are not to receive water unless it be pure and in a clean vessel.

Common Property Among Children.

By Dr. Flora Pollack.

In describing common property in public schools I shall include books, for even though each child has his own books, they are private property for one scholastic year, to be gathered in at the end of the session and doled out again to the succeeding class. It is not a fad nor imaginary danger that we dread in the contagion apt to be conveyed by books; the histories of infectious diseases teem with examples of diseases so contracted. The danger lies here. Given a child ill with scarlet fever or measles, so long as it is really ill it does not want entertainment, but so soon as its active mind demands employment the books are given to the child to be kept in bed for entertainment. Here the danger comes in. The cause of the disease is distributed in quantities and stored effectively between the leaves of the books. I doubt whether even the new disinfectants are capable of destroying germs so concealed. It may be too radical to advise ownership of books, but we should have public disinfecting plants for the sterilization of all articles coming out of infected houses.

The second disease-carrying article promiscuously used is the slate, to me the dirtiest, if not the most dangerous of the articles under discussion, for who has not seen the youngster wash the slate with the saliva when the sponge has become dry, or the rag lost. Besides this, the slate very soon becomes loose in the frame, and its furrow is the snuggest kind of a retreat for germs. The pencils are put into the mouth and then on to the slate, the fingers are moistened to erase mistakes.

The saliva of some healthy persons may contain a deadly organism. What then are we to expect of those cases which are known to be or to have been suffering with communicable diseases? Diphtheria will serve as an illustration. How many of our towns have official examiners of suspected or known cases of diphtheria, yet these organisms may remain for weeks and months upon the mucous surfaces doing no harm to the host, but capable of giving rise to virulent disease when transplanted to the throat of a susceptible individual.

The same holds true of the drinking cup. To have one drinking cup or two for a whole class of children and a hydrant or faucet is bad, but to have individual drinking cups and one bucket to serve as the dish pan as well as for the drinking water is worse. What then is the remedy, since parents object to furnishing cups? The remedy and the only remedy is in educaing the communities to a full appreciation of hygienic needs, and doing our best both as individuals, and in this organized body, to secure needed reforms, and feel with the poet that—

> "Only the Master shall praise us, and only the Master shall blame,
> And no one shall work for money, and no one shall work for fame;
> But each for the joy of the working, and each in his separate star
> Shall do the thing as he sees it, for the God of things as they are."

Papers were also read by Miss Mary A. Hardcastle upon "Water Supply of Schools," and by Mr. Thos. D. Bowers and Dr. W. R. Stokes on "Cleaning School Rooms."

Discussion.

Mr. M. B. Nichols asked what sort of vessel is safest and most convenient for keeping water in the school room.

Dr. Stabler thought that a white porcelain pitcher is the best water container, and glasses the best drinking utensils. They should be thoroughly cleaned daily.

Dr. Fulton suggested the use of glass vessels known as irrigation buckets. These have a conical shape, with a nipple at the bottom. A couple of inches of new rubber tubing are put on this nipple every morning. A pinch cock is put on the tubing. The water is drawn without touching the drinking cup to the water and without any spigot arrangement. If the rubber tubing is changed every day the container is necessarily emptied. A glass plate over the top excludes dust.

Referring to Dr. Fort's remarks about stupid children, Dr. Fulton said:

A careful examination of these backward children will often reveal the fact that they are not stupid, but defective in some sense, as sight or hearing. Proper medical treatment of throat, nose, eye or ear will open up these obstructed avenues of intelligence. Many of them could soon be returned to the group that measures up to the public school standard. Teachers, of course, are not capable of making these distinctions.

Referring to Mr. Mullikin's suggestions that the water supply of schools should be guaranteed occasionally by the State Board of Health, Dr. Fulton said that the State Board of Health would be glad to examine and report upon the water supply of any school without any cost whatever. Hundreds of such examinations have been already made, many of them in Talbot county.

Mr. Edward Reisler spoke against the use of slates in school, and in favor of paper tablets, saying that in ten years or more he had not used slates and that paper pads were preferable no less for the sake of quiet in the school-room than on account of the hygienic objections to slates.

Dr. T. A. Councell exhibited a formaldehyde generator, the property of the Talbot county board of health.

Adjournment.

AFTERNOON SESSION.

FRIDAY, NOVEMBER 11TH, 1898.

The meeting was called to order by the president, Dr. Rohe, at 3:10 P. M.

Heating and Ventilating the School Room.

BY MR. EDWARD REISLER.

This is a subject of great importance, and I am gratified that there are gentlemen here thoroughly competent to discuss it in a scientific manner.

It is important as affecting the health of both teacher and pupils.

An impure atmosphere incapacitates children and teacher for mental work.

Incidentally it may be mentioned that pure air and proper temperature in the school room contribute largely to good order.

There is ordinarily no great difficulty in warming the school room; but the trouble usually is to heat the room and at the same time ventilate it.

The average country school house, with one or two rooms, is heated by stoves. In this case the stove should be sufficiently large to heat the room without heating the stove red hot, or two or more stoves should be used in each room; the stoves should be of the best modern pattern and the flues constructed to give good draught; a large, wide vessel filled with water should be kept on the stove to prevent dryness of air. In the absence of flue ventilators, windows and doors should be opened for two minutes, at short intervals, to obtain a full supply of fresh air.

Respecting the temperature of the room, I may say, that in my experience I find 68° about right in dry weather, and 68° to 70° in damp weather. There should always be a thermometer in the school room, hung about five feet from the floor, against wood work and not exposed to radiation from the stove.

Large school buildings are best heated by steam, with a sufficient number of radiators in each room. I have no experience with the hot-water method. The hot-air furnace is objectionable on account of the dry, parched air, and the gases and dust liable to be carried from the furnace room. For ventilation I unhesitatingly recommend the double flue, such as we have in the Easton High School building, with an outward current from near the floor, and an inward current near the ceiling, though I do not think we have a sufficient number of these flues for the size of our rooms. It is the custom with the teachers in this school to open windows when the classes change, at thirty-minute periods. The doors from the school rooms to our large, airy halls, are usually kept open. Every room has its thermometer.

School Architecture.

By Mr. Henry Brauns.

Mr. Chairman, Ladies and Gentlemen:

Force of circumstances seems to compel me to do something that I have never done before, namely, to address a public assembly such as this now before me. Having had a good many years of experience as an architect, I feel quite familiar with the subject of making plans and specifications, but having had no experience in making speeches, I propose as a substitute for a speech, to read to you a somewhat lengthy article that appeared in the issue of the *Baltimore Sun* of February 26, 1898, hoping that the reading of it before this meeting will attract more attention to its importance than, I fear, it has heretofore received. The subject of School Architecture has *not* been one of my specialties, but about two years ago I prepared a set of sketches for a school building, to be erected by the city of Baltimore, which, however, owing to a lack of funds, has not as yet been built, and the ideas embodied therein have not yet been put to a practical test. Although this set of sketches was prepared about a year and a half before the article, which I shall read, was published, the plans embody all the suggestions contained therein. The *Baltimore Sun* of November 19th, 1896, in speaking of this set of plans, remarked as follows:

"Some of the numerous advantages over existing school buildings claimed for the new building are: Concentration of heating and ventilating apparatus at central points, producing economy of cost and space occupied, and permitting unobstructed use of the rest of the basement story for covered play grounds; the proximity of the coal bins to the furnaces, permitting economy of labor in firing, and easy removal of ashes; the furnaces placed closed to the smoke and ventilating shaft, and so arranged that one or more fires may be started to heat the entire building according to the weather; the entire space occupied by the heating apparatus to be made fireproof and cut off from the rest of the building by single fireproof doors, thus preventing dust from the coal and ashes permeating the school rooms—the flues and coat rooms so arranged as to produce the greatest economy of space occupied, and all coat rooms to have outside windows; no doors in the walls back of the teachers' desks to interfere with the blackboards; square open halls where the pupils are likely to congregate, and the main corridor unobstructed from end to end of building, with windows and fire escapes at both ends."

I will now read to you from the *Baltimore Sun* the. article which appeared in its issue of February 26, 1898. (See *Sun* of that date.)

All of the foregoing has reference more to school buildings for large cities, but the general principles will apply to country schools just as well, and should be thoroughly considered by all those who have charge of the erection of the smaller buildings in suburban and country districts. In fact, when the subject of air space is considered, the country schools should have fully as much per capita, if not more, on account of the fact that the teachers and scholars are accustomed to live much more in the open air than those residing in cities, and would therefore feel greater discomfort and their health be more seriously impaired if confined in small and badly ventilated rooms.

It has been asked why architects do not pay more attention to the subject of country schools, and my reply to the question is that, as a rule, county commissioners and school boards do not employ the best architects, nor are they willing to pay a sufficient fee to justify a thoroughly educated and experienced architect giving his time and attention to such work. An architect's fee for designing one small school house only would necessarily be out of proportion to the cost of the building. Personally I have had a little experience in this very town of Easton. Happening, some months ago, to be in your city on other business, I was invited to visit the office of the School Board for the purpose of examining some drawings that were being prepared for one of your schools by a young gentleman who, I believe, had never had a single day's experience in the office of a practising architect. Naturally, I found considerable criticism necessary, and in a few minutes I prepared a little sketch showing another arrangement, which was adopted *with thanks*. It was not suggested that I should send in a bill for services.

At a previous convention of this body, Dr. Stabler, of Montgomery county, read upon this subject a very interesting paper, containing many valuable suggestions, which if elaborated would produce excellent results. This I have attempted to do in the sketch which I herewith present for your criticism.

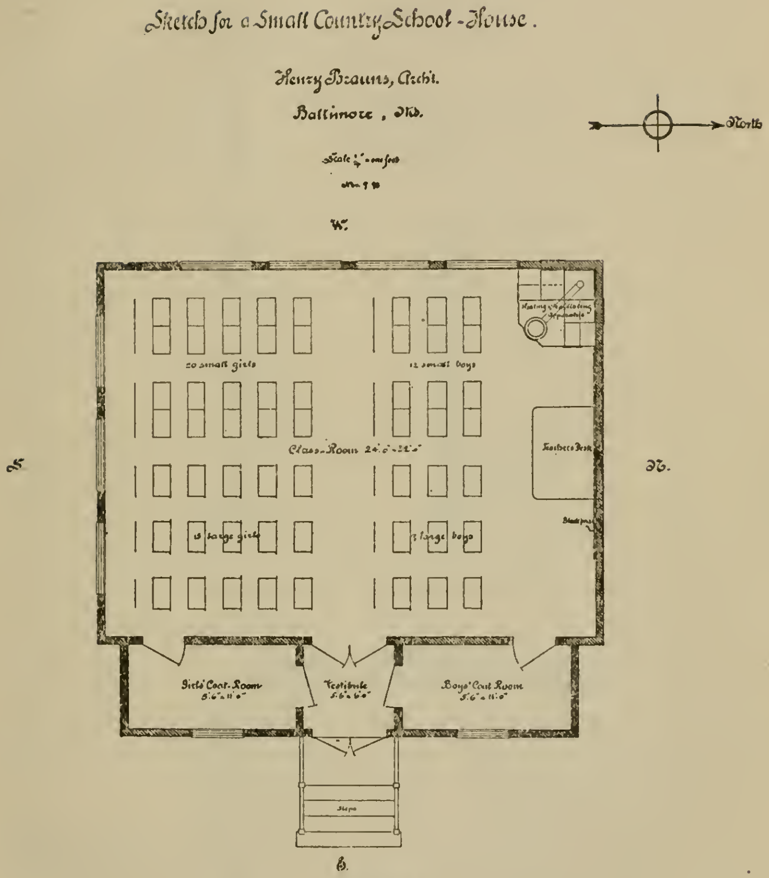

Sketch for a Small Country School-House.
Henry Brauns, Archt.
Baltimore, Md.
Scale ¼" = one foot
North
W.
S.
N.
E.
20 small girls
12 small boys
Heating & Ventilating Apparatus
Class-Room 24'.0" x 32'.0"
Teacher's Desk
15 large girls
9 large boys
Girls' Coat-Room
5'.6" x 11'.0"
Vestibule
5'.6" x 6'.0"
Boys' Coat Room
5'.6" x 11'.0"
Steps

Plate A.

This sketch (Plate A,) presents a plan for a one-room country school, arranged, I believe, with due regard to the rules laid down in the report to the Art Commission, which I have read. You will notice that it provides single desks for forty-eight larger scholars, or thirty-two double desks for sixty-four smaller scholars, or a combination of the two arrangements can be made, allowing for twenty-four large scholars and thirty-two small ones. It also shows that the seats are so arranged that the male and female scholars can be grouped separately, each having a separate coat room and entrance to the class room. The building and windows are placed so that no sunlight can ever come into the eyes of the scholars, and that the light will only enter from the rear and left hand side. The suggestion for the arrangement of the heating and ventilating is in line with the latest theories. (Plates B and C.) I must warn you, however, that unless the apparatus is placed as shown, in regard to the points of the compass, it would result in a failure to operate satisfactorily. The idea is one that could be put into execution at a very small expense in almost any existing building. It occupies a corner space, not of much use anyhow, of only five feet square. The stove is placed within a galvanized iron jacket eight feet high, open at top, for exit of warm air into room, to which fresh air is inducted from the outside by two flues, provided with screens and dampers, so that all of the fresh air can be forced to pass around the stove, or to enter above it, so as to temper the heat when necessary. The foul air is extracted from the room through openings, at the floor level, into flues connected with the main vent shaft, and a circulation is produced by the position of these flues, as well as by the heat of the smoke pipe passing through the vent shaft.

In conclusion I would say that I am ready and willing to take up the subject of plans, etc., for country school houses, and give to it the very best work that my head and hands are capable of, but like doctors and lawyers, when you apply to them for advice they hope *always* and expect *sometimes* to receive a fee for their services.

Sketch for Heating & Ventilating Small Country Schools

by

Henry Brauns, Architect

Baltimore, Md.

Dimensions to be proportionate to size of Room and Number of Scholars

Nov. 9 93.

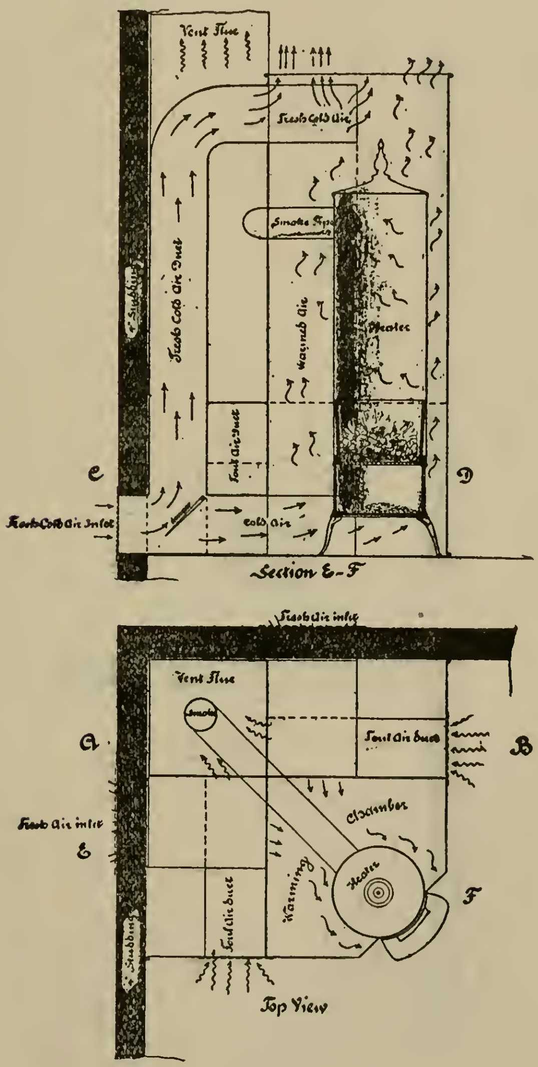
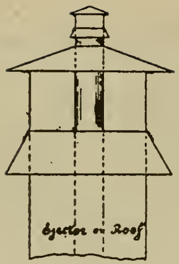
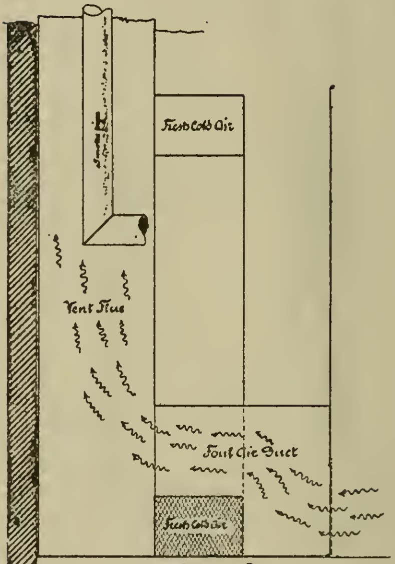
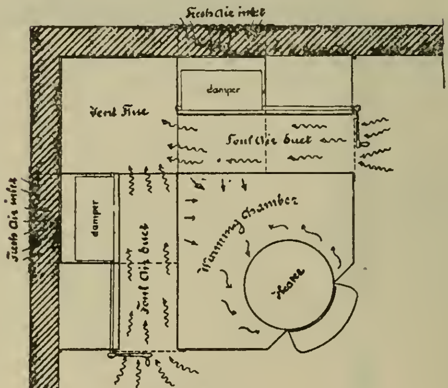


Plate B.





Section A-B



Sectional Plan C-D

Plate C.

Discussion.

Dr. Stabler: Although I am upon the programme, I have prepared no paper whatever for this occasion inasmuch as I read a short paper upon the same subject at the last meeting of this association. It is exceedingly encouraging to me to note the amount of interest that is being taken in the matter in this part of the world. Now Mr. Brauns has, out of the goodness of his heart, presented us with a plan that is far better than anything I could construct. I am not an architect, and I hope you will all be prepared to adopt, if you have the chance, these excellent designs of a thoroughly competent man.

There is a little bit of history that illustrates the fact that foul air doesn't go out of the ceiling. The Corn and Flour Exchange took up quarters in a modern building, with all improvements, and it was soon found that the members of the association were having headaches whenever they were compelled to remain in there for any length of time. There was a large hole in the ceiling and there were a number of ventilating flues, and on each side of the room there were openings into the vent pipe to carry off the foul air near the floor as it should be done. They had a number of telegraph operators in the Exchange and they had built their boxes over the openings in the vent pipe. I should have said that it was after this that the members began to have headaches. They did not own the building, but rented it, and they called in an architect to tell them what was the matter. He told them the hole in the ceiling was not big enough, and he made a larger one, but the headaches continued. They called him again, and he advised them that it would be necessary to spend $1,100 to improve that ceiling by making more holes in it.

The owners of the building then called in their expert, Dr. Billings, of Washington, who is an authority on the subject. He asked to see the plans of the building, and after studying them said there could be nothing the matter with the plan, as it was as good as he had ever seen. He then inspected the building, and on looking for the openings into the vent shaft found them closed by the boxes of the telegraph operators. By his advice these boxes were removed, the holes in the ceiling were stopped up, and there were no more headaches.

Dr. Fort: Since we have a competent architect, a member of our association, it would be interesting to put him on the witness stand to answer some questions. In this arrangement of the room in the plans, the stove being in the northeastern corner of the room, saves the child but roasts the teacher. The various zones spreading out from the stove in a country school give an opportunity for some children to roast and others to freeze. In my district the children take turns at being roasted.

In the cloak rooms attached there is very little space for the hanging of wraps. Most of these cloak rooms, at least in the district I come from, the hayseed districts, are used for lunch rooms, wash rooms, etc., the cloaks are hung up and the one solitary comb and brush is put in the corner. It seems to me there should be more floor space for this purpose than an average of fifty-five square feet. Arrangement should also be made for hanging the clothes from the ceiling, so that the air circulating in these rooms should pass through and around them.

It would not take much from the architectural beauty of the building to change this, so as to give more space for the purpose.

Mr. Brauns: The size of the cloak rooms is twenty-five per cent. larger than is found necessary in the Baltimore schools.

Papers on "Teaching Hygiene to Children" were read by Miss Lucretia Anthony, Miss Myra Longfield and Dr. John S. Fulton. The subject was discussed by Dr. Rohe, Mr. Reisler and Dr. Schaeffer.

Dr. Schaeffer said in part:

I am particularly pleased with Dr. Fulton's suggestion of celebrating in the schools one day in each year as a sanitary day, for I know the difficulty of interesting the public in health problems. It is a very distasteful subject, and many people seem to prefer to feel "tolerably poorly, thank the Lord," than to be entirely well.

Adjournment.

EVENING SESSION.

Friday, November 11th, 1898.

The meeting was called to order by the president, Dr. Rohe.

Papers were read upon "Physical Education in the School Room," by Miss Alice McDaniel, Mr. Alexander Chaplain, and Dr. Edward M. Schaeffer; and upon "Vacation Schools in the Children's Playgrounds," by Miss Eliza Ridgely; and on "Voice Training," by Miss Alice Forman.

The following were elected members of the Association:

Miss Mary E. Ford, Miss Alice McDaniel, Miss Maud Collins, Miss H. Mellier, Mr. Addison E. Mullikin and Mrs. M. B. Nichols.

After a vote of thanks to the School Board of Talbot county, to the local board of health and to the citizens of Easton, the association adjourned.

NOTE (by the State Board of Health): A considerable number of interesting and suggestive papers read at this meeting are not printed here. Some of them treated subjects which were not closely related to the work of this Board, while others are of necessity omitted for lack of space.

OFFICERS OF THE MARYLAND PUBLIC HEALTH ASSOCIATION.

President.

*Dr. George H. Rohe.............. .. Sykesville.

Vice Presidents.

Dr. Edward M. Schaeffer..............Baltimore.
Mrs. Daniel Miller....................Baltimore.
Miss Eliza Ridgely...................Baltimore.
Mr. Chas. R. Hartshorne..............Brighton.
Dr. Howard Bratton..................Elkton.
Dr. Augustus Stabler........ ....Olney.

Secretary.

Dr. John S. Fulton...................Baltimore.

Treasurer.

Dr. L. Gibbons Smart.................Roland Park.

---

*Dr. Geo. H. Rohe died suddenly at New Orleans, La., Feb. 6th, 1899.

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OF THE

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OF

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FOR THE

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1900

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STATE BOARD OF HEALTH OF MARYLAND, 1899.

DR. S. CHASE DE KRAFFT, Cambridge, term expires January, 1900, Pres.
DR. WM. H. WELCH, Baltimore, " " " 1902.
DR. JOHN MORRIS, Baltimore, " " " 1902.
MR. J. B. NOEL WYATT, Baltimore, " " " 1900.
HON. GEORGE R. GAITHER, Attorney-General, *Ex-Officio.*
DR. C. HAMPSON JONES, Baltimore City Health Commissioner, *Ex-Officio*
DR. JOHN S. FULTON, Baltimore, Secretary.

EMPLOYEES.

PROF. W. B. D. PENNIMAN, Analyst.
DR. WM. R. STOKES, Biologist.
MR. CHARLES N. MITTEN, Inspector.
M. L. RULLMAN, Clerk.
E. M. WHITE, Assistant in Bacteriological Laboratory.

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MAY 2[illegible] 1902 Publisher

ANNUAL REPORT OF THE STATE BOARD OF HEALTH.

To His Excellency John Walter Smith,
Governor of the State of Maryland.

The death of Mr. Frederick H. Smith and the appointment of Dr. S. Chase de Krafft to a position in the federal army necessitated a change of duties on the part of the members of the Board. Any inconvenience that might have resulted from these unforseen circumstances was remedied by the prompt and unremitting services of the Secretary, whose very ample report we have now the honor to present to your Excellency. The work done that is most important may be summarized as follows:

The vital statistics law of the last General Assembly, the good effects of which have been already felt throughout the State.

The bacteriological service of the State has been of great and generally recognized utility by the medical profession.

Analyses have been made of about three hundred specimens of water from different parts of the State during the past year. This work has been done at the request of medical men, and frequently by the heads of families, which requests are made through local health officers.

The inspector has, by direction of the Board, visited and inspected slaughter-houses throughout the State. He also interviewed all the undertakers in all the important towns, and instructed them concerning the operations and technical details of the vital statistics law. In addition to this he has travelled extensively in examining water supplies. In his manifold labors he has greatly assisted the Secretary.

The Board now meets monthly and your Excellency will agree that the amount of necessary important business could not be properly discussed and treated with due consideration if we met as formerly, but four times a year.

The number of local boards have increased in two years from twenty-five to thirty-nine. This of itself proves the extent and progress of the work of the Board. These thirty-nine boards of health give employment to forty-two health officers, not including the fifteen vaccine physicians in Washington County, all of whom have definite sanitary duties aside from vaccination. The Board of Health of Baltimore is not included in this list.

At the last meeting of the Board, the second week in January, 1900, the following officers and employees were elected:

Dr. William H. Welch was elected President; Prof. W. B. D. Penniman, Analyst, and Mr. Charles N. Mitten, Inspector.

John Morris, M.D.,
President (pro tem.) State Board of Health of Maryland.

REPORT OF THE SECRETARY.

Registration of Births and Deaths.

The last report to the State Board of Health began with an account of the registration law enacted by the General Assembly of 1898, and pointed out some of the difficulties which were anticipated in its administration. We shall be able to show in the present report the results which the law has yielded during the year ending June 30th, 1899.

We shall not present numerical tables, because the returns as collected by the State Registrar would in that form be seriously misleading. Our returns of death on file at the central office represents not more than fifty-five per cent. of the true mortality of the State outside of Baltimore City, and the returns of birth are certainly under fifty per cent. of the actual birth rate.

Full returns of deaths were collected, during the year ending June 30th, 1899, only by local registrars for Brunswick and Frederick, in Frederick County, and for Lonaconing and Frostburg, in Allegany County. Cumberland, the most important town in the State, after Baltimore, has had a burial permit ordinance for many years, but the local registrar for that town is not known to have made a single record in the year of any birth or death. Thus Cumberland is shown to be less enlightene upon her own sanitary condition and in this respect more indifferent to the welfare of her citizens than the smaller towns of Lonaconing and Frostburg, in the same county.

Since June 30th, 1899, Annapolis and Hagerstown have passed burial permit ordinances, and full returns are now being collected. Easton, Ellicott City, Havre de Grace, Canton, Highlandtown, Cambridge, Laurel, Pocomoke City, Steelton, Towson, Centreville, Williamsport, Port Deposit, Chestertown, Elkton, Westminster, Belair, Crisfield, and Salisbury are but little less indifferent to the rent-roll of death than is Cumberland.

While such statistics as we possess cannot be used for all purposes which they were intended to serve, they are probably worth the little money which the State has expended upon their collection. They do not take the absolute measure of any of the causes of death, but they do show the relations of the various diseases to each other, to seasonal influences, to age periods, and to locality.

It is quite unnecessary, if not extravagant, to continue collecting such fractional returns of death and birth, when slight modifications of the present law would, without increasing the cost, produce full returns.

The present methods are certainly extravagant in one respect, namely, that they make great demands upon the State registrar's time, diverting him from matters of higher and more immediate importance. How much avoidable labor has been involved in collecting the statistics may be guessed after reading an account of the first year's operations of the law.

HOW THE RETURNS ARE COLLECTED.

Local registrars are supplied with two books—one a register of deaths and the other a register of births. Each of these books consists of two hundred pages, admitting seven records on each page, fourteen hundred to each book. They are of a size convenient for storage in an ordinary safe. Transcripts are made in these registers of death and birth certificates in the order of their receipt. There is no alphabetical index.

The blanks for certificates of death are printed on salmon-colored library cards, perforated for filing. The registrars have each a japanned iron guide rod box in which to keep the certificates returned. Before the tenth of each month all of the certificates in his possession are sent by mail to the State Registrar. The birth certificate blanks are printed on white library cards, and are filed, recorded, and returned in the same manner as the "death" cards. These cards are distributed to the local registrar in packages of fifteen or twenty, each package enclosed in an envelope. On the back of the envelope the manner of filling out a certificate is illustrated for the guidance of those whose duty it may be to certify.

Nearly a hundred newspapers come regularly from all parts of the State to the office of the State Board of Health. These are all examined for information bearing upon local sanitary conditions, and especially for death notices. All the essential facts of record contained in the newspaper notes are transcribed to cards, and filed under an index card for the month.

When the monthly returns come in they are compared with this current list of deaths, and duplicates are eliminated. Two lists are then made out and forwarded to each local registrar, one of all certificates of deaths occurring in his sanitary district and reaching us by other routes than through this office, and one of all deaths known to have occurred, but for which no certificates have been turned in. The local registrar is requested to obtain the missing information, and at the same time the State Registrar sends out tracers in pursuit of the legal certificates. A large number of incomplete certificates are placed in a special drawer abelled "Further Inquiry."

For the purposes of "further inquiry," some circular letters had to be devised. The newspaper notices are found to contain most frequently the name of the clergyman officiating at the funeral, less frequently the name of the undertaker, and sometimes the name of the attending physician. We accordingly use a formal letter addressed to undertakers, another addressed to clergymen, and another addressed to physicians. Each of these letters has a device for numbering, that addressed to undertakers being marked U. I., No.—, printed on yellow paper; that to clergymen being marked C. I., No.—, on blue paper; that to physicians P. I., No.—, on white paper. All are printed with copying ink. Thus it is possible to bring together all the papers relating to a given case with relatively little trouble. The purpose of these special inquiry letters is, of course, to reach at last the attending physician, and to obtain from him a proper death certificate.

Every certificate, from whatever source, must be scrutinized in every item which it contains. Those who certify frequently omit such important matters as the date of death, the age, sex or color of the decedent, or else make a statement concerning the cause of death so confusing that a classification of the card is impossible. These matters must become subjects of special inquiry, and it is impossible to devise any formal letter which would apply to any considerable number of these questions. We usually send a letter of inquiry concerning these missing items and enclose a postal card already written, except as to the one or two essential words. When all the necessary information has at last been obtained, the office record now completed, or the original certificate in the handwriting of the attending physician, as the case may be, is put into another drawer marked "Finished Inquiry." The cards containing the information on which the pursuit of the legal record was based are all preserved in a third drawer. Meanwhile, the properly returned certificates are tabulated on the mortality sheets, and then permanently filed alphabetically and by counties. All the cards in the "Finished Inquiry" drawer are kept until another monthly return is made, when, if no duplication of records is found, they are tabulated and filed. The "Further Inquiry" cards represent the certificates of death which have been most expensive to collect. It has several times happened that our tracers have brought us in four or five certificates of the same death at a cost of sixteen cents or more in postage. Nevertheless, this plan has a very good effect in impressing upon persons whose duty it is to certify, the fact that neglect of this duty is not likely to pass unnoticed.

After we have exhausted all the means above described in an effort to obtain physicians' certificates, we have a large number of cards on hand which contain no information beyond that which was contained in the newspaper notices. These have not cost much to obtain, but they are worthless for all purposes, save mere enumeration. A glance at the chart, which shows the comparative importance of the causes of death, will demonstrate the commanding importance of the column marked "Unknown." This column represents the greater part of those deaths which are reported to us by the newspapers of the State, and shows also what a large part of the work properly belonging to local registrars is done in the office of the State Registrar. Besides the reports represented by this column, the newspaper contributions have swelled the other columns by as many notices as contained either a statement of the cause of death, or some item of information upon which we could press further inquiry till an authoritative certificate was obtained.

It will thus appear that of all the records of death filed in the central office of the State Registrar, quite one-half were begun and completed in the central office, without the aid of a local registrar. If our returns for the period are taken to represent fifty-five per cent. of the actual mortality of the State, it will be seen that of every one hundred deaths occurring seventy-two were unnoticed in the locality where they happened. This poor showing is not due to general neglect of the law, but to particular indifference in certain sections of the State, ascribable partly to the carelessness of the local officers, partly to hostility of boards of county commissioners, and wherever poor results are apparent, to want of popular enlightenment on the subject.

In some portions of the State the local returns have been really far worse than our figures show. Thus the showing made by Carroll County, poor as it is, owes next to nothing to the local registrar. Nearly all of the returns we possess were obtained without the aid of that functionary. The returns from Baltimore County would have been worse than those of Carroll but for the fact that so many bodies from that county are carried through Baltimore City to the places of interment. The Health Department of Baltimore City has made prompt returns of all such death certificates. The returns from Baltimore County owe nothing to the local officers except Dr. C. L. Mattfeldt, who has made almost complete returns from Catonsville and vicinity. The physicians of Baltimore County are as ready and willing to perform their duties as those in Baltimore City, and the Baltimore County Commissioners have needed nothing more than that the importance of this work should be put fairly before them. In these two counties, Baltimore and Carroll, the known character and abilities of the recently appointed local health officers* will bring about substantial improvement in this and other directions.

Allegany County owes nothing to Cumberland. In Cumberland the passing citizen receives no notice save from the press.

---

*Dr. Stevenson, of Sherwood, and Dr. Foutz, of Westminster.

The town has good sanitary laws, but no discoverable administration. Returns from Frostburg and Lonaconing are complete.

Dorchester enjoys the distinction of making the very scantiest returns among all the twenty-three counties in Maryland. The bad eminence of Dorchester is due to the want of burial ordinances in the thriving city of Cambridge, and there is little reason to hope for early improvement along this line of sanitary work

The best registration area is found in Cecil County, where all the necessary influences for good sanitary work are found, an intelligent population, a thoughtful, progressive Board of County Commissioners, an earnest and effective local officer.

Calvert County ranks as the next best registration area, and its registration for the present year promises to be more nearly complete than that for the year under consideration. Since Calvert is one of the very sparsely populated counties, the attention paid to registration of births and deaths must, in a great measure, be due to the local registrar's ability to secure and maintain the co-operation of the medical profession.

As a collection of public documents, about half the records on file are of value. Those which are well enough authenticated to be presented in a court of justice as evidence of any of the facts alleged in a death certificate, are of course the records bearing the signature of an attending physician. Half of the records on file would mean about thirty per cent. of all the records obtainable under a good system of registration. As a source of information for the purposes of a private citizen, our registration has therefore attained no more than one-third of a normal efficiency.

It may fairly be doubted whether these fragmentary results are worth the time and labor they have cost. Very probably much of the time spent upon these records by the State Registrar might have been more profitably employed in other official work. If a question concerning the continuance of this system of registration is admitted, it must be upon the ground that part of the cost is avoidable, and not on the ground that the results, even as they stand, are unprofitable. The information received has been fully worth the money it has cost, and if such information could not be more cheaply obtained, the necessary price should be paid rather than abandon the work.

But the laborious and relatively unproductive methods now employed are wholly unnecessary. Ninety-five per cent. of all the deaths happening in the State of Maryland can and should be collected and filed as permanent records, with no greater expenditure of State funds, and with no more cost in labor than has attended the registration work of the past year. To this end it is only necessary to modify the present law in such a manner as to secure good local registration.

The key to complete registration of deaths is the burial permit. Since all men are everywhere agreed that a dead human body must be disposed of promptly and in some decent way, it is only necessary to attach a legal formality to the act of burial in order to obtain a record of the death at or very near the time of its occurrence. Registration of deaths is not now, and has never at any time or place, been successful without a burial permit. Eighty per cent. of all the deaths occurring in the State of Maryland happen within ten minutes easy transit of a local registrar. A burial permit law applying only to incorporated towns of one thousand or more inhabitants would insure the registration of ninety per cent. of the deaths which annually occur.

For the purposes of the State Board of Health statistics based upon ninety per cent. of the total mortality would be exceedingly useful. Indeed, the remaining ten per cent. might at no great risk be neglected. But the State Board of Health does not wish these records solely for its own purposes. It cannot be too much insisted upon that these records have great and growing value, and that they are of use in a great variety of ways in the conservation of private, as well as public interests, Wherever they have long been established, as in New England and most of the Middle States, in Michigan, in most European countries, they are a source of valuable .information, constantly consulted by private citizens, public officials and professional men of all classes. It is not alone the statistical facts which are of use, but the mine of personal information contained in these easily accessible records is of even greater immediate value. It falls well within the limits of probable truth to say that in Maryland every year quite three thousand citizens are forced, in guarding their own private interests, to employ some clumsy and expensive substitute for purposes which these records would serve both conveniently and effectively. A good authority has said that more pension claims fail of successful prosecution through want of proofs of death or relationship than for any other cause. If many just claims fail of right adjudication from this cause it is more than probable that as many fraudulent claims are successfully imposed upon the Government by testimony which authoritative official records would at once disprove.

It must be clear that the material interest which every citizen of Maryland has in a correct system of registration of births and deaths is far greater than the value which the sanitary authorities of the State set upon the records. The *sanitarians* are besieging the Legislature for vital statistics, which are to them the balance sheets showing what head, if any, they make against disease and death. The *people* need for their own and different purposes the records upon which these statistics are based.

The State cannot, therefore, neglect the ten per cent. of deaths which occur outside of incorporated towns and cities, and must for equal justice to all her citizens make record of at least the two most important events in the history of every individual.

To illustrate the value of these records, aside from their hygienic uses, I offer some figures obtained from some of the important cities operating registration offices:

In Boston no accurate account is kept by years, but the clerk of the Registry Department says that in 1898 about 5,200 copies of records were called for.

Washington, D. C., has records covering a very few years; yet the citizens asked for and obtained in the fiscal year 1898–1899 copies of records for the following purposes:

Insurance claims	143
Pension claims	274
Evidence in court and otherwise	92
To be sent to foreign countries	18
Total	527

St. Louis has had a registry department for only a short time. Copies of records were asked for in 1898 to the number of 880; copies of birth certificates, 64; of death certificates, 816.

In New Orleans in 1898, 887 copies of vital statistics records were asked for by citizens.

In Philadelphia, during the same year, 7,430 copies of records were asked for:

Insurance claims	1,329
Pension claims	1,389
Other uses	4,712

The Registrar of Vital Statistics of Chicago replied to our inquiry that in 1898 no record was kept of the number of copies of record asked for. The uses to which they were put were insurance claims, pension claims, evidence in court, to be sent abroad, and in settlement of estates. The vital statistics of Chicago are not of many years' standing. About four years ago more than a thousand copies of these records were asked for by citizens.

In New York, in 1898, the total number of copies of records of births and deaths obtained by the citizens was 18,735. No account was kept of the purposes for which these transcripts were used. Including the marriage records there were 21,124 searches made.

These figures certainly show that official records, such as we desire to make primarily for their use in sanitary work, have a different and perhaps an equal value for the private purposes of citizens. It is evident that if the records of New York were destroyed, the sense of personal loss would touch more than 20,000 persons within a year, and would affect an equal number of citizens in each of many succeeding years.

The bill, which was originally offered at the last Legislature, contained the following two sections, which are not found in the law.

Section 6 B in the original bill was as follows:

"Each local registrar shall have power to appoint competent persons, to the number of not more than one for each election district in the registrar's jurisdiction, to act as sub-registrars. Such appointments shall be made so as to suit the convenience of each locality, shall be certified in writing, and shall be recorded in the office of the State Registrar. Such sub-registrars shall be duly sworn to the faithful performance of their duties, and their term of office shall not extend beyond the term of office of the appointing registrar. Each sub-registrar shall be authorized to make all such records and to issue all such certificates and permits as are made and issued by the local registrar, and shall, in the first five days of each month, send to the local registrar the originals of all certificates, records and permits remaining in his possession on the last day of the preceding month."

Section 6 E of the original bill provided that:

"No interment of any dead body of any human being, or disposition thereof in any tomb, vault or cemetery, nor any embalming process, or injection of any preservative substance, shall be made without a permit as aforesaid from the registrar or sub-registrar of the district where said person died, or otherwise than in accordance with such permit. The application for a burial or removal permit, together with the statement of facts required therein, shall be signed by a relative, friend, householder, manager of the institution upon whose premises the death occurred, or by any competent person acquainted with the facts. The certificate of death shall be signed by the physician last in attendance upon the deceased person, (or by the health officer or coroner, in case of death without medical attendance or of sudden or violent death). It shall be the duty of the undertaker or other person in charge of the burial or removal of the body of any deceased person whose death occurs in any registration district of the State, to obtain the application for burial or removal permit, with the certificate of death, file the same with the registrar in whose district the death occurred, and obtain the proper burial or removal permit based thereon from the registrar prior to the burial or removal of the corpse, and it is hereby made the duty of the attending physician, in attendance upon any person who shall die, to leave with the family or at the home of the deceased, a certificate setting forth the cause of such death, which certificate shall, by the said family or friends of the deceased, be given to the undertaker, in order that he may obtain from the registrar the proper burial or removal permit. And it shall be the express duty of the registrar to see that the law governing the issue of burial and removal permits is strictly complied with, that all personal and statistical information, required on the blank applications, is fully supplied, so far as it is possible to obtain the same with reasonable effort, and that a clear and distinct statement of the cause of death, so far as known, is made by the certifying physician. In case of doubt in regard to the return of a cause of death, or if a vague or ambiguous statement is made under that head, the registrar, before granting a permit, shall immediately refer the application to the health officer or coroner, who shall investigate and report the facts over his official signature; provided, that in case of an investigation of an unsatisfactory return, the registrar may issue, in his discretion, when it shall appear that death resulted from natural causes and not from unlawful means, a temporary permit allowing burial or removal, which temporary permit shall be cancelled by regular permit issued in due form upon the completion of the proper return; and provided, further, that in case of death from any contagious or infectious disease, said certificate shall be made and forwarded immediately."

For Section 6 B, the following was substituted and became a law:

SEC. 6 B. All physicians shall be sub-registrars of vital statistics, and shall be authorized and required to make all such records and certificates as are made and issued by the local registrar, and shall in the first five days of each month send to the local registrar all certificates and records made during the month next preceding.

This makes all physicians State officials, imposing upon them duties which they do not desire and cannot be made to perform. Section 6 B, as it originally stood, would have secured the attention to this important business of a small number of competent men who, taking up the work after formal qualification, could have been held responsible for the mortality returns of their districts.

It would be quite practicable to give this duty of registration in small rural districts to justices of the peace, and so avoid the multiplication of officers. The justices are at least as well qualified for this small clerical work as for coroner's duty.

Section 6 E contained no provision which will not eventually become the law of the State. Objection was made to the stringency of the regulations imposed upon undertakers. Indeed, it is quite customary in Baltimore City for undertakers to complete all the work of preparing a body for burial before seeing the certificate of death or applying for a permit to bury. The Legislature did not seem to be impressed with the view that under such circumstances neither the manner of death, nor even the fact of death is known to the undertaker upon any other authority than his own observation and the representation of the friends who are unknown to the undertaker. Under such circumstances murder may have been committed, and the crime may be effectually concealed by the undertaker. Instances in which murder by poison has been done, and conviction of the criminal rendered difficult or impossible by prompt embalming, are quite numerous. How many cases of the same sort have been successfully and completely concealed can only be conjectured.

In the rejected section (6 E) the householder or nearest friend was required to state certain of the essential facts concerning the deceased person. This is right, because such facts should be certified by the person to whom the facts are personally known, rather than by a person who must give these statements at second hand.

Objection was also made to the very express injunction upon the local registrar to collect all the essential facts before issuing a permit, and to issue no permit upon vague or ambiguous statements, allowing him in certain cases only the discretion of a temporary permit, pending the completion of the regular certificate. These requirements do not seem rigorous. They are details which the faithful officer will attend to without special admonition, but if the law does not insist upon this scrupulousness, careless or unsuspecting health officers may unwittingly contribute to a great deal of dangerous petty crime, and to some crime of great gravity. Still, since this rejected section of the bill was distinctly more rigorous than the present local law for Baltimore City, it is not surprising that it was looked upon unfavorably. These provisions are, however, a part of the law of the best registration States. If it had been passed as it stood, one item of some importance in connection with the certification of deaths would still have been lacking. I mean the verification of deaths.

In this Staate, out of every ten deaths certified to by a physician in private practice, not more than one is certified upon the positive personal knowledge of the physician that death has, indeed, occurred. The physician usually believes that death has taken place, because death was expected, and he certifies upon information from some member of the family, or perhaps upon the information of a messenger who never saw either the person said to be dead, nor the physician to whom the message is delivered. In such cases, those who send such a message are usually reporting, to the best of their inexpert knowledge, that the event expected has come to pass. It is hardly safe to accept in all cases such statements as the basis for the disposal of a body that possibly may not be dead. It is, of course, extremely unlikely that innocent error will ever arise from failure of the physician to verify the death before making a certificate. But the ready acceptance by physicians of such information and their habit of immediately certifying, whether the alleged event was expected or unexpected, may undoubtedly open the way for gigantic fraud, and American life insurance companies have recognized the danger of such conspiracies.

While these rejected provisions of the bill proposed at the last Legislature are desirable, they are not all indispensable, and might have been lost without great regret, if it had been possible to save that one provision which is indispensable. The present law would become effective if the following were added to Section 6 E of the Act:

> "No interment of any dead body of any human being, or disposition thereof in any tomb, vault or cemetery, shall be made without a permit

from the registrar or sub-registrar of the district where said person died, or otherwise than in accordance with such permit. It shall be the duty of the undertaker or other person in charge of the burial or removal of the body of any deceased person whose death occurs in any registration district of the State, to obtain the certificate of death, file the same with the registrar in whose district the death occurred, and obtain the proper burial or removal permit based thereon from the registrar prior to the burial or removal of the corpse."

This brief and simple amendment to the law will insure the collection of correct records of deaths in ninety-five per cent. of all instances.

The testimony of local health officers, found in later pages, is repeated here in connection with this subject.

"I find that I have registered 357 births and 128 deaths, hardly half of the number of each that have occurred.

"I think that there should be a burial permit section inserted in the Registration Law, making it imperative that the certificate pass at once under the scrutiny of an official before the body can be interred."

C. H. Brace, M.D.,
Health Officer for Allegany County.

"The correct estimating of the relations between births and deaths, or, in other words, the relative increase or decrease in the population of the county depends upon the completeness of these records.

"In order that these records may be complete, I suggest that the next Legislature be asked to add a section to the law providing for a burial permit, and make it unlawful to bury a body without a permit from the health officer of the county. This system is in use in Baltimore City, where all burial permits are issued by the Health Commissioner."

H. Burton Stevenson, M.D.,
Health Officer for Baltimore County.

"I am in favor of passing a law requiring all doctors to give a burial permit throughout the State.

"I also am in favor of all births being required reported under penalty of the law.

"I also think all health officers should be paid at least twenty-five cents for recording births and deaths."

John Swope Matthias, M.D.,
Health Officer for Carroll County.

"The majority of the physicians report births and deaths promptly but much value is detracted from this good work by the derelicts who send in late and incomplete reports. The above statistical report of deaths is not full. We have endeavored to make it so by letter and personal solicitation, but it is impossible for one health officer in a county to get a full report without the cheerful co-operation of the physicians.

"A burial permit should be required in all cases of interment. It should be issued upon the presentation of a proper certificate upon which the physician should write in the cause of death, after the other data are collected by the family or the undertaker."

Howard Bratton, M.D.,
Health Officer for Cecil County.

"I have forwarded to you all the death and birth cards I have received from physicians in the county, and very few physicians pay any attention to this law. I think a very wise plan would be to have an officer to whom persons should be compelled to apply before burying their dead. I know of persons having been buried in this county with highly contagious diseases, and the same was never reported to the health officer and no attention was paid to the matter whatever. People innocently went to the funeral without knowing the danger they were running in doing so."

C. L. CECIL, M.D.,
Health Officer for Charles County.

"It is my opinion that the reporting of births and deaths should be made compulsory and paid for by the State. If, as is justly claimed, vital statistics is of such great importance and value to the State, why not have a general State law, uniformly fixing the salaries of health officers in the counties, according to the size and population of the same, and paid for by the State? Now the health officers, who are expected to go from one part of the counties to the other, depend upon the various Boards of County Commissioners, who, in many cases, know nothing and care less about health officers."

GEO. P. JONES, M.D.,
Health Officer for Dorchester County.

"Owing to the unsatisfactory registration of births and deaths in Frederick County, I regret exceedingly my inability to make out a statistical report that would prove of any practical value to your Honorable Board. Since a current account of deaths, with special references to causes, is a matter in which all sanitarians are deeply interested, this is most unfortunate.

"That you are entirely familiar with the defects in the Registration Law as it now stands, and that you will call special attention to the same in your report I have not the slightest doubt, since your experience must have convinced you that without a burial-permit section added to the present law it will remain practically valueless. To be effective, said permit must be made a necessary preliminary to the disposal of the dead body. Such permits would naturally be made out at the time and place of death in the presence of the family, who could give any information desired. It would rapidly follow the event, its importance would be more fully recognized and its prompt return greatly facilitated—all of which are essential. It is simply the key to the situation in the rational solution of the whole question. Returns to be of any practical value must be prompt, full and accurate.

"One other cause of the failure in the registration is the lack of adequate compensation. The State is fully able to pay for all services faithfully performed by her citizens. You cannot expect efficient service without adequate compensation. There should be a uniform fee commensurate with the intelligence required, as well as the actual labor performed. It is unreasonable to expect the Registrar of Births and Deaths to perform his duties gratuitously, and as I plainly stated in my report to the County Board, I seriously question the legality of the Act which would compel them to do so."

DAVID M. DEVILBISS, M.D.,
Health Officer for Frederick County.

"So far as vital statistics are concerned, I have sent to you, from time to time during the year, all that have been reported to me. I am aware that the reported births and deaths fall far short of the total in the county. I believe a burial permit section in the registration law would have a good effect in securing death reports throughout the county and smaller towns.

"A *fair compensation* ought to be allowed local registrars for work of recording the certificates. It is only a simple business question as to how much it should be."

W. H. Ravenscraft, M.D.,
County Health Officer for Garrett County.

"In reference to the "vital statistics" law, it is impossible to get anything like a full return.

"I think a registry law requiring a burial permit from the health officer of the city or county, to be given upon receipt of a certificate from the doctor attending the case; the undertaker to give the blank to the family to be filled by the doctor, and then taken to the party designated by the health officer and a burial permit obtained, the undertaker inclosing them to the health officer. This would at least give full returns of deaths."

Thomas B. Owings, M.D.,
Health Officer for Howard County.

"The establishment of a bureau of vital statistics, with branches in the counties, has not during the past year resulted as I hoped. The value of vital statistics is unquestioned. That they should be full and complete is necessary—to get them so requires more stringent laws.

"A committee (I am a member) was appointed at the last meeting of the Maryland Public Health Association to urge the passage of a law by the Legislature at its next session, requiring the possession of a burial permit issued by the Secretary of the local Board of Health before a deceased person can be buried, and making it unlawful to fail to comply. This would compel the doctors to at once report the death to the Secretary, also would make the undertaker unable to carry out his work without such a certificate. Such a law would entail a greater amount of clerical work on your Secretary, but would surely accomplish its purpose. This is no new thing, as all the cities have such a law."

W. Frank Hines, M.D.,
Health Officer for Kent County.

" 'There is but one way to insure immediate registration, and that is to forbid any disposition of a dead body until a proper record is returned. The burial permit is the key to prompt registration, and without it no vital statistics law can be economically operated.' I sincerely hope that the next Legislature will make such provisions in an amended law.

"Another important detail is the fair compensation of local registrars for the work of recording the certificates. I think a fee of fifteen cents for each complete record made is little enough remuneration."

E. E. Stonestreet, M.D.,
Health Officer for Montgomery County.

"While a majority of the physicians of the county have manifested a willingness to comply with the vital statistics law, I still have abundant reason to regret, and even to complain, of an incompleteness along this line that must render our statistics unreliable, if not actually misleading: yet I am gratified to note some improvement touching this important matter within the past year.

"Why could not one element at least of the defect be remedied at the coming session of the Legislature? What would better accomplish thi than a section requiring a burial permit? This would insure fuller and more prompt reports. This feature of the law might be very properly corrected, as well as the inadequate compensation received by a local health officer throughout the State."

JAMES BORDLEY, M.D.,
Health Officer for Queen Anne's County.

"The undertaker should not be allowed to bury any body unless he has a death certificate, properly made out by the attending physician, and that would compel some member of the family to go to the physician's office and get the certificate before burial would be possible."

L. B. JOHNSON, M.D.,
Health Officer for St. Mary's County.

"In my opinion the State should either improve the law requiring the registration of births and deaths or abandon it. The operation of the law reveals two classes of physicians—one yielding acquiescence to the request of the State for information which shall furnish an accurate birth and death rate, as well as establlsh the comparative prevalence of fatal diseases; the other, ignoring the law and withholding information absolutely essential to the construction of vital statistics, which shall truthfully represent conditions in Maryland, and as contemplated by the law. The failure of these delinquents nullifies the faithful work of others, and renders the returns of little or no value."

J. McP. SCOTT, M.D.,
Health Officer for Washington County.

"There is urgent necessity for a burial-permit section to the Registration Law. We hope for a favorable consideration of this matter at the ensuing Legislature."

CHAS. P. JONES, M.D.,
Health Officer for Worcester County.

"Perhaps the best way to obtain full and prompt reports of deaths (the need of which I would particularly emphasize) would be the incorporation of burial-permit section in the Registration Law."

WM. S. WELCH, M.D.,
Health Officer for Annapolis, Md.

"The system of reporting and recording deaths and infectious diseases is working to our complete satisfaction. The burial permit contributes largely to the completeness of the death returns; in fact, we might say it is the key to the whole matter. Our local ordinance forbids the burial or removal of a body without a permit, and the result is such that we would recommend its adoption throughout the State."

H. S. HEDGES, M.D.,
Health Officer for Brunswick, Md.

"To obtain a complete record, no body should be removed from the location where death took place without a permit from the local health officer or registrar, and I sincerely hope that such a provision will be added to the present vital statistics law. If such a law is enacted at our next Legislature it will be of great benefit both in accurate collection and recording of death certificates and the reporting of contagious diseases."

CHAS. L. MATTFELDT, M.D.,
Health Officer for Catonsville, Md.

"The proper collection of mortality statistics would necessitate the enactment of a law providing for the issuance of a burial permit for every death occurring within the State. An official could be designated to act in such capacity even in the most sparsely settled portions of our State, and that, too, without cost. If Maryland desires to take rank among the progressive States some action must be taken by the Legislature, such as the enactment of a general burial-permit law."

C. F. GOODELL, M.D.,
Health Officer for Frederick City, Md.

"The need of a burial-permit section in the Registration Law is very evident."

H. S. WEUSTHOFF, M.D.,
Health Officer of Havre de Grace, Md.

"One of the most important things to my mind is the need of a burial-permit section in the Registration Law, and it is essential that we get such a provision into the law at the next Legislature. A very necessary detail is a fair compensation of the local registrars for recording certificates. A fee of twenty cents for each complete record is little enough for the counties and small towns of Maryland."

A. SHELMAN WARNER, M.D.,
Health Officer for Highlandtown, Md.

"Our health ordinance provides that no human body shall be buried without a permit from the town clerk. This and other restrictions connected with the burial and removal of dead bodies has helped to teach the people to be more careful about needless exposure at funerals in case of death from contagious disease. The ordinance was well received, and has rendered valuable assistance to our undertakers and ministers in conducting funerals. A State law, with similar provisions, might well be enacted."

JAMES O. BULLOCK, M.D.,
Health Officer for Lonaconing, Md.

Another section of the law which needs amendment is Section 6K. It will be observed that no compensation is provided for the performance of the duties imposed by this act upon local registrars. In older registration States the usual fee for recording a death is twenty cents. This small fee will prove no burden upon any county in the State. Wherever a single registrar makes the records for a population of one hundred thousand or over, it will be wiser to pay a stated salary for the work of the local registrar. For any less number of people it will be more economical to pay a fee of twenty cents for each certificate recorded by the local registrar. The amount of money expended in each county for recording deaths may be estimated by multiplying the estimated population of the county by 36, and striking out the last four figures. Applying this to the population of the State, outside of Baltimore City, it will be found that $2,400 will fully cover the fees for records of death in a year, even if such large towns as Cumberland, Hagerstown and Frederick should pay their registrars by fees. These figures are obtained by assuming the death rate in the counties to be eighteen per thousand persons living. This is a liberal estimate of the death rate, since that for Baltimore City, which should be higher than that of the rest of the State, is about nineteen per thousand. No argument whatever should be needed in favor of so insignificant a tax upon the twenty-three counties of Maryland.

RESULTS OF THE VITAL STATISTICS LAW DURING ONE YEAR.

There are on file at the office of the State Board of Health cards representing 6,721 deaths which occurred between July 1st, 1898, and June 30th, 1899. During the same period, certificates of births were received to the number of 5,586. If we subtract from the number of death cards those which have no other basis than a newspaper notice there will remain 5,041, which would give as an apparent ratio of births to deaths five and a half to five. If another correction were made on account of the fact that reports of individual deaths are directly pursued by the State Board of Health, while the reports of births are sent in solely on the volition of the reporter, we shall find that the figures represent a ratio of about eleven to nine. It is not by any means intended to offer such a ratio as the demonstrable ratio of increase of native population. The figures merely indicate a balance in favor of growth. It has always been the experience in early years of registration that far more births than deaths escaped record, and so no doubt it has been in Maryland.

The certificates of birth are roughly divisible on the line of color, but it has been thought better not to enumerate colored and white births separately, since the reports of white births have certainly been a far greater proportion of the births actually occurring.

Similarity with respect to deaths, a separate enumeration for each race would give misleading results. Our sources of information are more accurate as to deaths among the upper social classes.

A diagram is here shown of the deaths for the year ending

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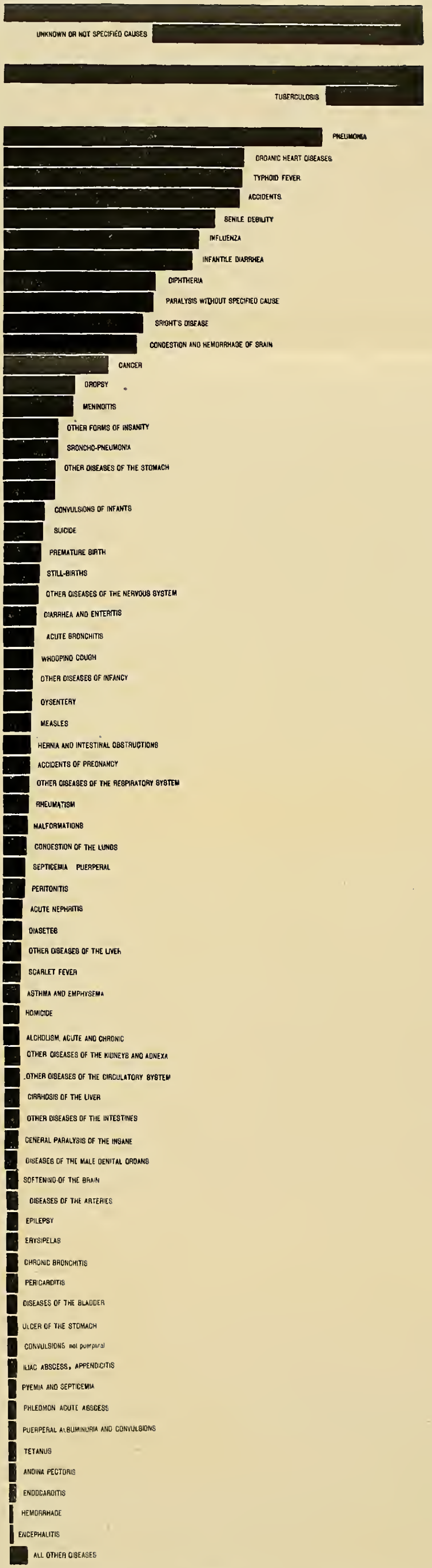


No. 1.

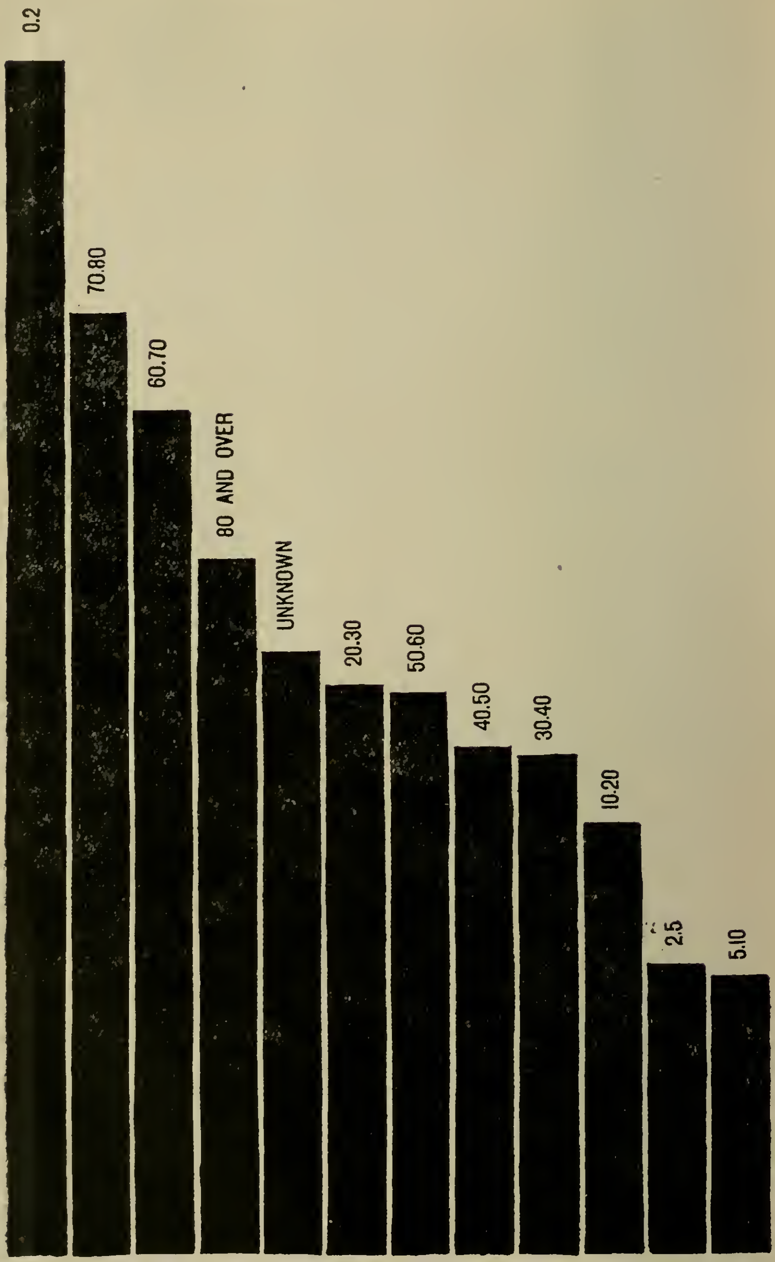
Showing the principal causes of death from July 1, 1898, to June 30, 1899, arranged in the order of their importance.

A diagram is here shown of the deaths for the year ending July 1st, 1899, divided according to causes of death. If the column marked "unknown" is disregarded, the diagram shows that the causes of death in this State stand in about the same relation to each other as in the States operating more perfect plans of registration.

The "unknown" column consists almost entirely of deaths for which we have been unable to obtain authenticated certificates. This column represents the deaths of citizens who were of sufficient importance to secure their notice in the newspapers, but whose means of taking off were not harrowing enough to be of news interest. Tne newspapers have enabled us to confer unmerited distinction upon violent death. The accident, suicide and homicide columns occupy higher rank than they should.

The diagram showing deaths by ages shows marked deviations from the ordinarily observed mortality at different periods of life. This diagram is not, however, to be interpreted at all. We have no means of ascertaining the number of persons living at the various ages, and without this factor no safe reasoning can be based upon the deaths charged to each period.

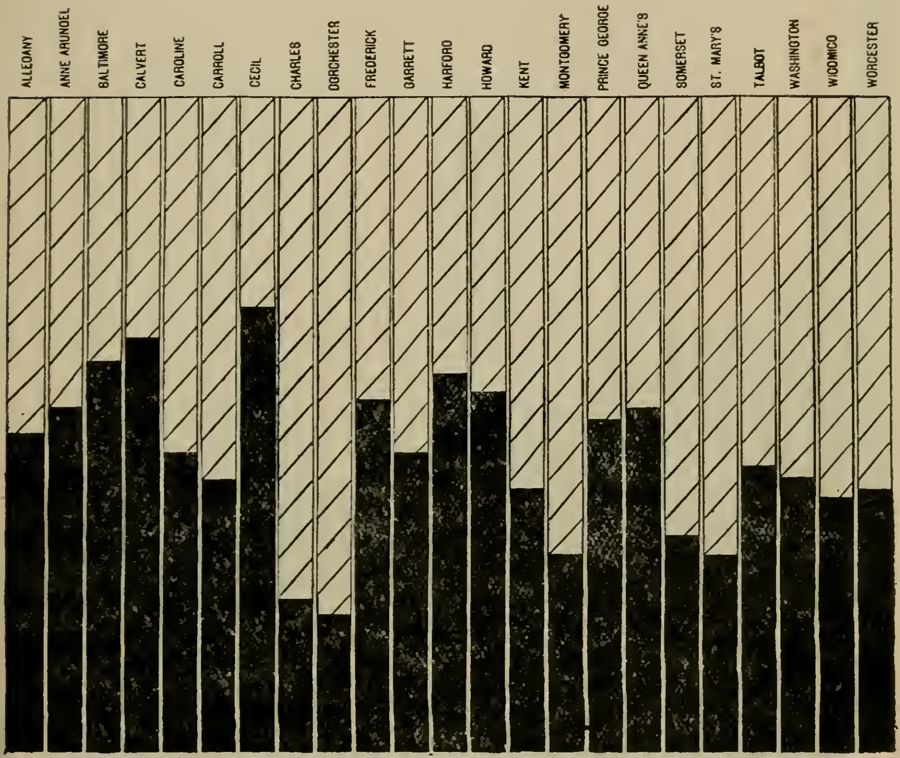
One preventable disease (or class of diseases) is strong enough to thrust itself into prominence in this diagram. Infantile diarrhœa creates the havoc which gives the column of deaths under the age of 2 its gloomy eminence, and perhaps will indicate to thinking men that measures designed to cut down this item of avoidable loss would yield some profit to the State. This diagram is, however, of little interest just now.



No. II.

Total mortality from July 1, 1898, to June 30, 1899, classified by age-periods.

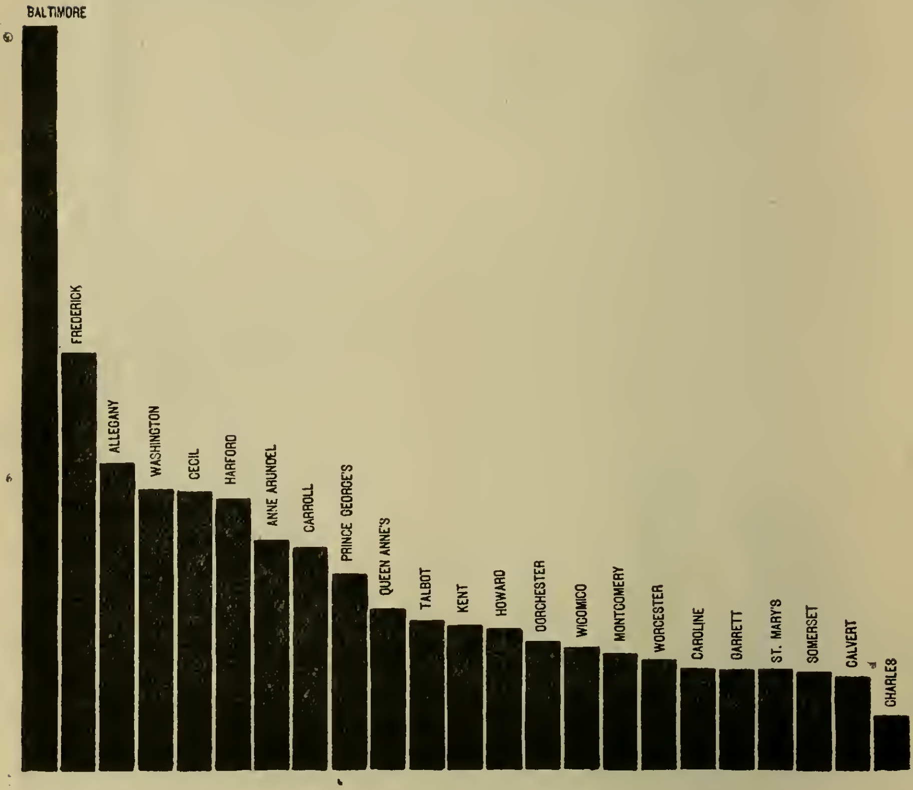
The next diagram shows the relation between the death rate of each county calculated upon a basis of seventeen per thousand of the estimated living population and the reported death rate. A death rate of seventeen per thousand as the older registration States show outside of large cities, and is probably higher than the actual death rate in Maryland. A glance along the row of columns will show how far short each county has fallen of correct returns.



No. III.

Showing the proportion of deaths reported in each County on an assumed death rate of 17 per thousand of population living. Black columns show the death rate as derived from the actual returns of death. The Counties of Maryland arranged in order of population are: Baltimore, Frederick, Washington, Allegany, Dorchester, Carroll, Anne Arundel, Harford, Cecil, Montgomery, Prince George, Kent, St. Mary's, Talbot, Wicomico, Queen Anne, Somerset, Worcester, Howard, Charles, Caroline, Garrett, Calvert.

The next diagram shows how the twenty-three counties would be ranged according to the actual number of deaths reported.



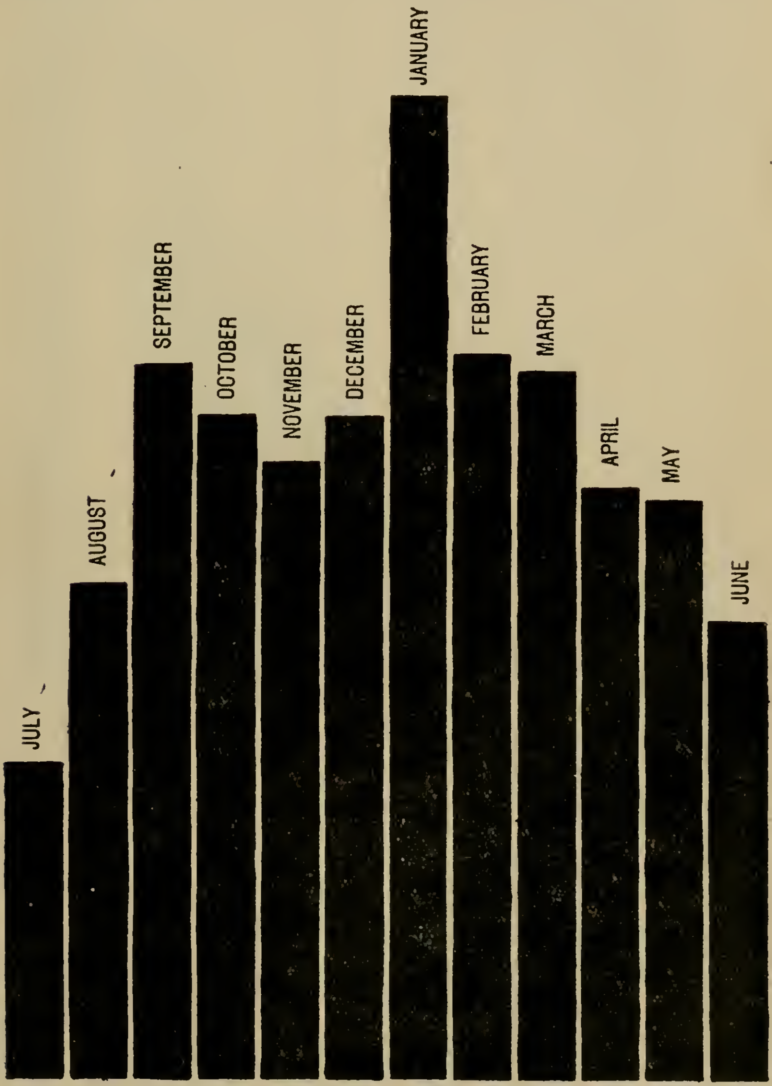
No. IV.

Counties in the order of the number of deaths actually reported.

The counties of Maryland follow each other in order of population as follows: Baltimore, Frederick, Washington, Dorchester, Allegany, Carroll, Anne Arundel, Harford, Cecil, Montgomery, Prince George's, Kent, St. Mary's, Talbot, Wicomico, Queen Anne's, Somerset, Worcester, Howard, Charles, Caroline, Garrett, Calvert.

Comparing this list with the diagram, Allegany is found ahead of Washington. This is due to the burial permit ordinances of Frostburg and Lonaconing. Cecil is found in the place which belongs to Dorchester, Dorchester being ten numbers behind its proper rank. Harford is in the place which belongs to Carroll, this change of place not being due to good administration in

Harford. Anne Arundel has its proper rank, and since Annapolis has now a burial permit ordinance, the county will next year probably appear well ahead of its rank by population. Queen Anne's, through good administration, appears where Montgomery should be. Prince George's is two numbers and Talbot three numbers ahead. Kent and Wicomico are in their places. Garrett, Caroline, Calvert and Worcester are each ahead, while Somerset, St. Mary's and Charles are behind their proper positions. Howard has the rank which belongs to the larger county, St. Mary's.



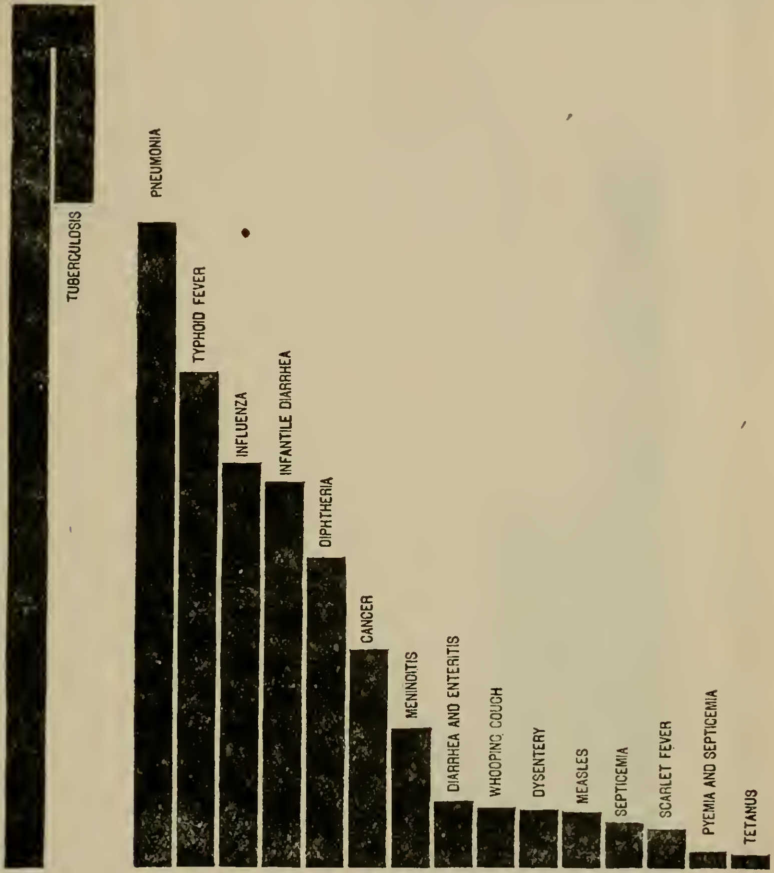
No. V.

Mortality from July 1, 1898, to June 30, 1899, classified by months.

The diagram showing deaths by months is inserted here chiefly for the interest it will have for comparison with future observations, which it is hoped will follow the seasonal tide of disease and death. The growth of the observance of the law may be fairly traced by this diagram. July represents the very first attempt to assemble one month's returns of deaths in Maryland. No July ever marked the low tide of death. July, August and September are the months when babies die. Our returns, however, were increasing chiefly because information concerning the law was spreading. Typhoid fever was busy in September, October, November and December, but the drop which occurred in October is probably due to the political campaign which diverted the attention of the newspapers from the campaign of death. The towering height of January, 1899, owes something to La Grippe and pneumonia, but more to the dearth of news in county towns, and perhaps still more to a tour among the undertakers made by Mr. Inspector Chas. N. Mitten.

The decline from January, 1899, to June, 1899, is normal in direction, and from February on about normal in degree.

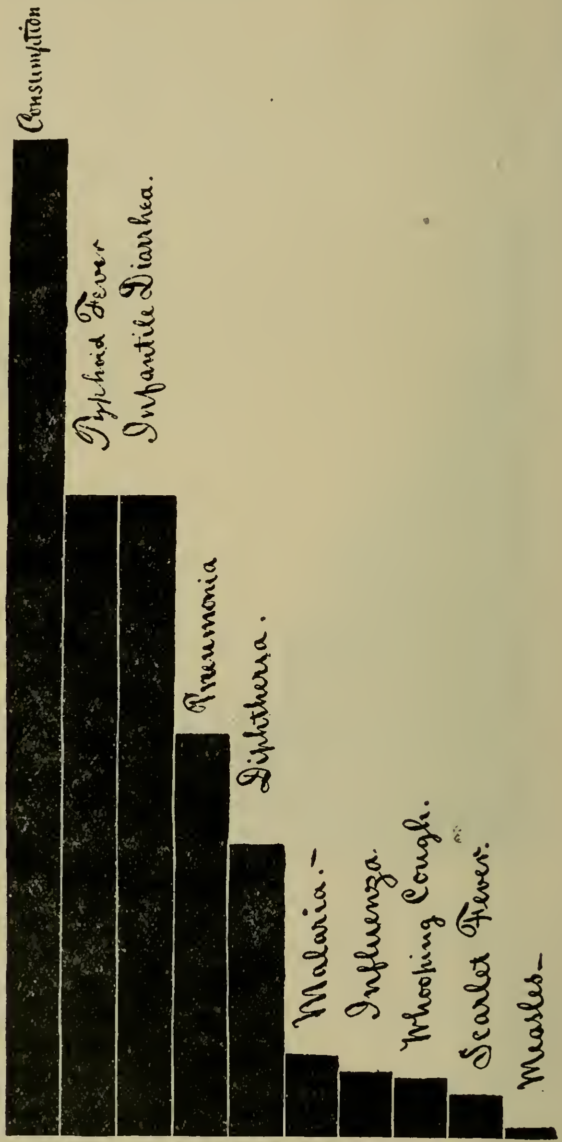
The year's losses from preventable diseases are shown in the next diagram, and for the purpose of comparison the chart of this first six months of this period is reproduced from the last report. Tuberculosis is seen to have maintained its preeminence. Influenza and pneumonia having received their winter accessions, assume greater importance in the chart for full twelve months. Typhoid fever subsided during the winter only far enough to be surpassed by pneumonia. The losses inflicted by diphtheria in the six months after January 1st were



No. VI.

Comparative mortality from preventable diseases, July 1, 1898, to June 30, 1899. (*Cancer not properly included.*)

about equal to those of the preceding six months. Whooping cough and measles destroyed more life, and scarlet fever less life, in the second six months.



No. VII.

Mortality of the principal preventable diseases in the last six months of 1898. (From the report of 1898.)

Local Boards of Health.

When the last report was written there were forty local boards of health in the State, twenty-two county boards and eighteen town boards of health. Since then but two new boards of health have been organized. Somerset County has at last a board of health, having as its Executive Officer Dr. Martin W. Goldsborough, of Princess Anne. Hagerstown has also organized a municipal board of health with Dr. T. W. Simmons as Executive Officer. Thurmont, in Frederick County, made an effort to organize a board of health, but is not known to have completed this endeavor.

The Olney Board of Health, in Montgomery County, one of the oldest and most earnest boards in Maryland, has had its usefulness much impaired by a very curious legal technicality. The Act which created this board of health was omitted from Poe's Code of Public General Laws, probably for the reason that this Act is a local law. The Act was at no time repealed either expressly or by implication in the terms of any subsequent Act, but having once appeared in Poe's Code and having later been omitted from that book, the legal adviser of the County Commissioners of Montgomery County held that the law had ceased to exist and that the Commissioners were not authorized to levy any sum for the maintenance of that board. This may be law, but it is not common sense. On the contrary, it seems to the unsophisticated mind to be uncommon nonsense. Such a view, if it had been reasonable, would have seemed most dangerous to any fair-minded guardian of public safety, and an immediate effort would have been made to repair the damage which such a view entailed. Certainly no intention or desire to stop the work of this board was apparent anywhere outside the office of the County Commissioners. This extraordinary view may have been held for some other reason than that such a view was desirable, but no good result of any sort followed this ruling except the saving of money to the county treasury. The Olney Board of Health paid no salary to any one. It looked after the sanitary welfare of a very enlightened and orderly farming community and sometimes expended as much as twenty-five dollars in a year. The utmost saving possible by destroying this local board of health was the price of fifty circus tickets.

The Hagerstown Board of Health collects information concerning the occurrence of infectious disease and transmits the same to the State Board of Health. If other local boards of health would notify the State Board promptly, giving the post-office address of each infected family, it would be possible for the State Board to send short communications instructing exposed persons concerning the simple means of avoiding infection. These communications, arriving at a time when their contents would possess immediate personal interest, would be carefully read and the instructions would be practiced. Popular education, which is perhaps the most important work of a State Board of Health, could be pushed forward by this means most rapidly. The distribution of circular literature among persons who are not aware of any impending danger is not likely to have any lasting effect, but the distribution of circulars definitely adapted to an actual and existing condition is sure, by reason of its timeliness, to make an enduring impression.

The Annapolis Board of Health has made an important step forward during the year. A burial permit ordinance has been passed, so that all deaths occurring in that city are recorded at the time of their occurrence. It seems surprising that this town, one of the oldest in the State, and the town of great historic interest, should have had no such records hitherto. This deficiency was in fact so surprising to the recently elected Mayor, Mr. Seidewitz, that he insisted upon its immediate repair.

There are now in Maryland seven towns besides Baltimore which attempt to insure the immediate registration of all deaths by requiring a burial permit in every instance. They are Annapolis, Brunswick, Cumberland, Frederick, Frostburg, Hagerstown, Lonaconing.

In Cumberland, as has been elsewhere remarked, the burial-permit ordinance is neglected, so that the registration of deaths in that town is not so good as in the sparsely-settled and remote communities. All the other towns mentioned are completely successful.

As to the organization of county boards of health in general, it may be said that the system practiced in this State is not a good one. There are very few men on the boards of county commissioners in Maryland who have ever given any consideration to matters of public health, and when the subject is brought to their attention they usually treat it as if the business of sanitation were something to be postponed entirely until some unlikely emergency occurs, and even in the presence of an emergency they are unwilling, as a rule, to make any except temporary provision for the defence of public health.

In some counties the position of health officer is one of the petty political plums. The tenure of office is but one year, and it is sometimes the desire of those making the appointment that the health officer shall do as little as possible. The health officer who does no sanitary work whatever, provided he does not abstract any very considerable sum of money from the public funds, is on the whole the most satisfactory public functionary.

There are a few county boards to whom public health is an object of some importance, and to whom the representations of conscientious health officers are made with good effect; but, excluding health officers, there are not in the State, among all the county boards of health, five men who know the principles of public hygiene. It is from medical men that a proper appreciation of this subject is to be expected, and while it is undesirable that boards of health should be composed exclusively of medical men, every board should have more than one medical member. At least two men selected for their special fitness should be upon every board of health. One member of the board of county commissioners, one member of the school board, with two reputable physicians, appointed by the Governor of the State, or by the Judge of the Circuit Court, would, after completing their organization by the choice of an executive officer, make a good local board of health. There is certainly need of some sort of organic union between the State and local boards of health. If the choice of an executive officer were made subject to confirmation by the State Board of Health, a reasonable guarantee of efficiency would be secured. In some States the State Board of Health has the power to appoint and to remove local health officers. Here in Maryland that is neither necessary nor desirable.

All local boards of health should be visited several times a year by some representative of the central board of health. In that way the State Board of Health would be enabled to cooperate more intelligently with local boards, and those local officers who are doing their best would be sure of support and encouragement. On the other hand, no better check can well be placed upon indifference, incompetence or malfeasance than the certainty of publicity.

An examination of the reports of local health officers will show measurable improvement in most of them. At least there is no local board of health in the State which seems to call for severe criticism. Last year there were two which deserved unmeasured denunciation. There are still one or two silent boards of health. No harm is known of these dumb devotees of Hygeia. They are probably worth all the nickels bestowed upon them by the communities which maintain them.

If we might select a few of the good local reports in order to show why they are good reports, perhaps the Counties of Washington, Frederick, Cecil, Kent and Queen Anne's may serve that purpose. It is fair to say that of these Washington and Cecil have the best reports. Why? Because they represent better organized work. Besides competent and earnest executive officers these counties have boards of commissioners intelligent enough to appreciate and support the sanitary work of their officers.

In Washington County the county officer receives reports upon certain sanitary matters from fifteen vaccine physicians. These extra duties were laid upon the vaccine physicians at the suggestion of the county officer, and the result is that Washington County is not only the best vaccinated county in the State, but is perhaps also the best informed county at all times as to her general sanitary condition.

The health officer of Cecil County has no such aids. He has, however, a Board of County Commissioners who meet once a month as a Board of Health, and give honest consideration to the reports of their executive officer. There are no town boards of health in Cecil, and no district health officers of any sort, so that the information conveyed in the report from that county owes little to any other influence than the vigilance and energy of one man.

The report from Frederick contains nothing to indicate that any real organization of the County Commissioners as a Board of Health has been effected. The chief towns, Frederick City and Brunswick, have their own local boards, so that the county officer is chiefly concerned with rural hygiene, and apparently he is permitted to prosecute his work quite unaided. Under such circumstances it is impossible that his report should contain the circumstantial evidence of continuous effort which appears in the reports from Cecil and Washington Counties.

In Kent and in Queen Anne's the County Boards of Health are in effect the executive officers. There is no town board of health in either of these counties, and no means of systematic communication concerning prevailing sickness exists in either. These counties, therefore, owe whatever distinction they obtain in a sanitary way to the personal power and influence of their health officers, rather than to official qualifications or organization.

In all five of these counties the reports indicate an amount of work which is not adequately paid for, but the five health officers are not equally underpaid. Arranged in accordance with the money spent on sanitary work Washington stands first, Frederick next, then Cecil, and Kent and Queen Anne are equal.

These considerations perhaps show that an effective organization of a local board of health under the present law on the subject requires first the selection of a superior medical man as executive officer, and next, on the part of the commissioners, sufficient intelligence to appreciate the suggestions of their medical adviser, and independence enough to put them into practice.

So long as county commissioners are chosen by the people without the slightest consideration of their fitness to regulate the sanitary affairs of the county, it must be pure good luck if any county has a board of health which deserves to be called good.

List of County Health Officers.

Names.	*Counties.*
Dr. Charles H. Brace, Cumberland	Allegany.
Dr. J. M. Worthington, Annapolis	Anne Arundel.
Dr. H. Burton Stevenson, Rider P. O	Baltimore.
Dr. T. M. Chaney, Dunkirk	Calvert.
Dr. J. L. Noble, Preston	Caroline.
Dr. Chas. R. Foutz, Westminster	Carroll.
Dr. Howard Bratton, Elkton	Cecil.
Dr. C. L. Cecil, Wicomico	Charles.
Dr. Geo. P. Jones, East Newmarket	Dorchester.
Dr. D. M. Devilbiss, Woodville	Frederick.
Dr. W. H. Ravenscraft, Oakland	Garrett.
Dr. Chas. A. Hollingsworth, Belair	Harford.
Dr. Thos. B. Owings, Ellicott City	Howard.
Dr. W. Frank Hines, Chestertown	Kent.
Dr E. E. Stonestreet, Rockville	Montgomery.
Dr. L. A. Griffith, Upper Marlboro	Prince George's.
Dr. James Bordley, Centreville	Queen Anne's.
Dr. Martin W. Goldsborough, Princess Anne	Somerset.
Dr. L. B. Johnson, Morganza	St. Mary's.
Dr. T. A. Councell, Easton	Talbot.
Dr. J. McP. Scott, Hagerstown	Washington.
Dr. Chas. R. Truitt, Salisbury	Wicomico.
Dr. Chas. P. Jones, Snow Hill	Worcester.

Town Health Officers.

Dr. J. H. Kennedy	Aberdeen.
Dr. Wm. S. Welch	Annapolis.
Dr. H. S. Hedges	Brunswick.
Dr. John Mace	Cambridge.
Dr. Charles L. Mattfeldt	Catonsville.
Dr. J. F. Somers	Crisfield.
Dr. Geo. L. Carder	Cumberland.
Dr. C. F. Goodell	Frederick.
Dr. C. C. Jacobs	Frostburg.
Dr. T. W. Simmons	Hagerstown.
Dr. H. S. Weusthoff	Havre de Grace.
Dr. A. S. Warner	Highlandtown.
Dr. Wm. L. Lewis	Kensington.
————————	Laurel.
Dr. J. O. Bullock	Lonaconing.
Dr. C. F. Hargis	Pocomoke City.

NOTIFICATION OF INFECTIOUS DISEASE.

The law upon this subject has been fairly well operated in some of the counties of Maryland, and in all the counties it has been about as well administered as are the other laws of public health. Some of the town boards of health have the full and hearty co-operation of practising physicians, and prompt information is obtained of every appearance of the notifiable diseases. The boards of health in Frederick, Brunswick, Lonaconing and Hagerstown are probably as fully informed at all times concerning the presence of infectious disease as is the Health Department of Baltimore City. The newly organized Health Board of the City of Hagerstown regularly returns to the State Board of Health all the notices of infectious disease which are received in the course of each month. These notices contain the address of all infected houses, with the names of the householders. Information of this sort can be turned to great practical account by the State Board of Health, and it is very desirable that all local boards of health should make the similar returns. Throughout Washington County the notification act is well observed in respect to diphtheria, scarlet fever and measles, the common diseases which are best restricted by easy means.

A CONVICTION FOR FAILURE TO NOTIFY SMALL-POX.

On the morning of the eleventh of May information was received that two cases of supposed small-pox had been sent from Sparrow's Point, in Baltimore County, to the Baltimore City Quarantine Hospital as private patients, paid for by the Maryland Steel Company. Inquiring at the City Health Department, it was learned that a report from the Quarantine Hospital gave the name of the last patient as Egbert Thrower, admitted May 8th, and it was stated that the physician to the Maryland Steel Company informed the quarantine officer that the case had been reported to the health authorities. No notification of this case having reached the office of the State Board of Health, written inquiries were at once sent to the local officers in Baltimore County, and they were also interrogated by telephone. But one officer was reached by telephone, Dr. C. L. Mattfeldt, who was on that date the acting health officer for Baltimore County, who replied that he was ignorant of the existence of any infectious disease at Sparrow's Point, having received no notification of any sort from any physician at that place. Later, letters were received from all three of the local officers stating that no notification had been sent.

The eleventh of May happened to be the date of the regular monthly meeting of the State Board of Health. The above facts were reported to the Board, and the Secretary was instructed to investigate, and if the facts showed that a case of small-pox occurring at Sparrow's Point had been recognized by the attending physician and had not been reported to the health authorities of the county or State, to cause the arrest and punishment of the physician so delinquent.

Late in the afternoon of May 11th the Commissioner of Health of Baltimore City informed the Secretary of the State Board of Health that Dr. E. G. Welch had sent a notification to the Department that a colored man, one Jackson, an employee of the Maryland Steel Company, had just been at his office for medical advice, having then small-pox in the stage of eruption ; that said Jackson had returned to Sparrow's Point, and would, on the following morning, be in Baltimore again. The Secretary of the State Board of Health went to Sparrow's Point on the first morning train for the purpose of finding and isolating this patient, and to discover, if possible, the existence of other cases. The physician of the company was seen, and he expressed great surprise that the presence of small-pox in that community, if true, should be known in Baltimore before it was discovered by himself. By consulting the pay-roll we were enabled to locate the man Jackson. He was found in a compartment of a series of barracks occupied by the lowest class of labor employed by the company. There were three other colored men occupying the same room. Jackson was sent to Quarantine Hospital. This part of the shanty was ordered shut up until it could be disinfected. The other three colored men were to be isolated and kept under observation until the period of incubation of the disease had passed.

Mr. Wood, superintendent of the Company, gave a ready assent to every suggestion for the prevention of further spread of the disease, and from that time forward co-operated with and assisted the health authorities in the work of suppressing the disease.

On the following day the Secretary of the State Board of Health revisited Sparrow's Point in company with Dr. Stevenson, Health Officer for Baltimore County, to arrange for general vaccination. While there it was discovered that the room from which the man Jackson had been removed had not been shut up, nor the exposed persons in any way isolated. One of them was sick, the eruption just appearing. We were informed there was a suspicious case, probably small-pox, in that part of the town known as "The Island." This case was visited by Dr. Stevenson. On Sunday, the 13th, while vaccinating from house to house, three cases of small-pox came under the observation of the Secretary, one of whom was dropping the crusts and must, therefore, have been more or less sick for about three weeks.

This patient claimed to have been visited by the company's physician and to have been treated for eczema.

The other facts concerning this outbreak of small-pox may be found in the report of the Health Officer for Baltimore County, Dr. Stevenson. These circumstances are mentioned here in connection with the prosecution of the company's physician for failure to report the case of Egbert Thrower, who was sent to Quarantine Hospital on May 8th.

A warrant was sworn out against the physician for violating Section 34B, of Article 43, of the Code of Public General Laws, before Justice Wm. Leyshon. The preliminary hearing before the magistrate was waived, and bond was given to await the action of the grand jury. The grand jury of Baltimore County, at the October term, found an indictment. The defense elected to be tried by the court. The physician was found guilty, and the lowest fine of fifty dollars was inflicted.

This case was an important and interesting one. It tested the ability of the State Board of Health to obtain both an indictment and conviction, notwithstanding the absence of intent to violate the law, and without the introduction of evidence to prove gross neglect of ordinary precautions. The evidence offered before the grand jury was only so much as was believed necessary to secure an indictment. At the trial the State admitted the defendant's plea of ignorance of the law. The defense made large claims of great activity and effectiveness on the part of the company's physician in the suppression of small-pox both before and after the intervention of the health authorities, and the State did not challenge these claims. The defense was conducted by able and industrious counsel, who employed every available expedient. The outcome would seem to indicate that the local health authorities in this State can enforce the notification of infectious diseases.

THE BACTERIOLOGICAL LABORATORY.

The report of the bacteriologist to the State Board of Health will show part of the useful work done by that officer. While the work of that department is growing, and while its results in the short period of its operation have been worth more than their cost to the State, there are some directions in which the advantages of bacteriological examinations have not been demanded at all.

Thus in determining the period at which a child recovered from diphtheria may safely be allowed to return to school, a bacteriological examination of a culture from the throat is the only safe guide. There has not, so far, I believe, been an instance in which this methed of settling so important a question has been employed by any school board or local board of health. There is absolutely no other means of solving such a question. A child is fit to associate with other children from the moment when the bacilli are no longer found, whether that occurs within a day or a month of apparent recovery, and it is manifestly important to restore the privileges of attendance at school in the shortest possible time. No period can be assumed as a safe one for exclusion from school, and even if it were known that these children all cease to be infectious within such a reasonable period as two weeks, it would still be foolish to exclude all children from school for that time, since the majority are free from infection within a much shorter period.

The custom throughout the State, outside of Baltimore City, is to permit a child to resume attendance at school whenever a physician is willing to certify freedom from infection. But no physician can certify freedom from infection upon any other than a bacteriological examination. The services of the State Bacteriological Laboratory should be largely employed for this purpose. The waste of public money caused by loss of time from school could be considerably reduced by this simple and inexpensive precaution.

It has been found extremely difficult to impress people that any loss of public money is involved in the sickness of school children. When a school is closed on account of infectious disease, as sometimes happens, the school officials have no difficulty in seeing that a waste of money is involved, and some times protest vigorously that it costs more to close the school than it would to let the children take their chances of infection at school. If it wastes money to send home thirty-five children and lock the school house for two weeks, it certainly costs one thirty-fifth of that amount if one child is absent for a like period. Indeed the absence of one child costs rather more than one thirty-fifth of the cost of closing the school, since all of the means provided for thirty-five children are expended upon the thirty-four, while certain items of expense are saved when the school-house is closed.

It seems strange that these little facts of elementary arithmetic should be so difficult to impart to educated people. The total amount of the petty waste of public funds through absence from school is undoubtedly very large, and so far as it is due to preventable sickness should be a matter of serious concern to those who manage the affairs of public education. The closing of a school on account of infectious disease is admittedly an expensive procedure, and it is well worth the while of school officials to inquire whether it is ever necessary. Certainly such a wasteful means of restricting infectious disease is avoidable, and if avoidable, unnecessary. It is to be avoided by attention to the primary cases, and that means careful notice of every absence from school on account of sickness. Probably more schools are closed in Maryland on account of diphtheria than for any other reason. If there is any common disease which recent advances in public hygiene have brought well under control, it is diphtheria, and it is quite within the power of every local board of health, with the co-operation of the school authorities, to master every outbreak of diphtheria without interrupting the work of the schools. If the cultural examination of throats were the means generally employed to determine the fitness of children from infected houses to associate with other children, the schools would forthwith cease to propagate diphtheria in the towns of Maryland.

Wherever the service of the State Laboratory has been fairly introduced among the physicians of a locality, great advantages have been promptly realized, and in many instances as promptly acknowledged. There can be little doubt that indirectly these examinations have contributed to the saving of lives by solving the doubts or removing the perplexities which embarrassed private practitioners. There is no medical man anywhere whose ability to cure disease may not be strengthened by laboratory aid in the matter of diagnosis. The service of the laboratory has not, however, met anything like equal demand in all parts of the State. Full information was sent to every local board of health immediately upon the organization of the laboratory, and this notice was repeated in all localities from which no response was made. It is certainly not the purpose of the State Board of Health to waste public money by sending these expensive supplies to localities which manifest no desire to employ them, and it is true that these valuable aids to the saving of human life are not available to some physicians who would be glad to use them.

It is obviously impossible to send these supplies directly to physicians. That would require a much larger outfit than the appropriations will afford, and would besides, lead to endless errors, and to great loss of material. Since the usefulness of these supplies depends upon their circulation, convenient drug stores are designated as depositaries, and the separate cases are only given out as needed. By this means it is possible to keep the supplies moving, and at the same time to have them everywhere accessible at all times. For the selection of these distributing depots the local health officers have been depended upon.

For purposes of contrast we may take the adjoining counties of Frederick and Carroll. Westminster, the important county town of Carroll, has not had one penny worth of this valuable service, though her health officer has more than once had his attention called to this liberal provision of the State. From Frederick the demand for supplies has been constant for a long time, although no unusual amount of sickness has occurred there.

SLAUGHTER HOUSES IN MARYLAND.

Mr. Charles N. Mitten, Inspector of the State Board of Health, visited during the year all the towns in Maryland of 500 inhabitants or over, and inspected all the slaughter houses. His reports are too voluminous for publication, and an abstract has been prepared, showing the important facts developed by the inspection.

Abstract of the Inspector's Report to the State Board of Health on the Slaughter Houses in Maryland Towns.

No slaughtering is done in the following towns:

UNDER 2,000 INHABITANTS.

Alberton	Howard County.
Aberdeen	Harford County.
Bladensburg	Prince George's County.
Boonsboro'	Washington County.
Brooklyn	Anne Arundel County.
Centreville	Queen Anne's County.
Deal's Island	Somerset County.
Denton	Caroline County.
East Newmarket	Dorchester County.
Eckhart Mines	Allegany County.
Fairmount	Somerset County.
Govanstown	Baltimore County.
Hancock	Washington County.
Hyattsville	Prince George's County.
Lutherville	Baltimore County.
Mardela Springs	Wicomico County.
Millington	Kent County.
Mt. Vernon	Somerset County.
Mt. Washington	Baltimore County.
North East	Cecil County.
Oakland	Garrett County.
Port Deposit	Cecil County.
Princess Anne	Somerset County.
Queenstown	Queen Anne's County.
Savage	Howard County.
Snow Hill	Worcester County.

Stevensville	Kent County.
Texas	Baltimore County.
Towson	Baltimore County.
Trappe	Talbot County.
Vienna	Dorchester County.
Warren	Baltimore County.
Westover	Somerset County.
Westernport	Allegany County.
Wetheredville	Baltimore County.

BETWEEN 2,000 AND 4,000 INHABITANTS.

Catonsville	Baltimore County.
Crisfield	Somerset County.
Easton	Talbot County.
Elkton	Cecil County.
Frostburg	Allegany County.
Laurel	Prince George's County.
Salisbury	Wicomico County.
St. Michael's	Talbot County.

OVER 4,000 INHABITANTS.

Cambridge	Dorchester County.

Slaughter houses are found in the following towns:

UNDER 2,000 INHABITANTS.

Barton	Allegany County. Offal fed to hogs. Pork sold to shippers. Fats rendered.
Belair	Harford County. Fats rendered.
Berlin	Worcester County. Offal fed to hogs. Pork sold to citizens. Fats rendered.
Burkittsville	Frederick County. Fats rendered.
Chesapeake City	Cecil County. Offal fed to hogs. Pork sold to citizens. Ice harvested from a pond draining a slaughter house. Fats rendered.
Cecilton	Cecil County. Offal fed to hogs. Pork sold to citizens. Fats rendered.
Church Creek	Dorchester County. Offal fed to hogs. Pork used by butcher. Fats rendered.
Church Hill	Queen Anne's County. Fats rendered.
Clearspring	Washington County. Offal fed to hogs. Pork sold to citizens.
Cockeysville	Baltimore County. Offal fed to 10 hogs. Pork all used in butcher's family.
Elkridge	Howard County. Offal fed to hogs. Pork sold to citizens.

Ellicott City	Howard County. Offal fed to hogs. Pork sold to citizens.
Emmittsburg	Frederick County. Offal fed to hogs. One butcher ships the pork to Baltimore. Another uses it in his own family. Fats rendered.
Federalsburg	Caroline County. One filthy slaughter house. Offal eaten by dogs. Fats rendered.
Funkstown	Washington County. Offal fed to hogs. Pork sold to citizens. Fats rendered.
Greensboro'	Caroline County.
Hampstead	Carroll County. Offal fed to hogs. Pork used by butchers.
Hillsboro'	Caroline County. Fats rendered.
Keedysville	Washington County. Offal fed to hogs. Pork sold to citizens. Fats rendered.
Libertytown.	Frederick County. Fats rendered.
Manchester	Carroll County. Fats rendered.
Middletown	Frederick County. Fats rendered.
New Windsor	Carroll County. Fats rendered. Offal fed to hogs. Pork sold to citizens.
North East	Cecil County. Fats rendered.
Oxford	Talbot County. Fats rendered.
Perryville	Cecil County. Offal fed to hogs. Pork sold to citizens. Fats rendered.
Reisterstown	Baltimore County. Offal fed to hogs. Pork shipped. Fats rendered.
Rock Hall	Kent County. Fats rendered.
Rockville	Montgomery County.
Sharpsburg	Washington County. Offal fed to hogs. Butcher eats the pork. Fats rendered.
Smithsburg	Washington County. Fats rendered. Offal fed to hogs. Pork eaten by butcher.
Sudlersville	Queen Anne's County. Fats rendered.
Taneytown	Carroll County. Offal fed to hogs. Pork sold to citizens. Fats rendered.
Union Bridge	Carroll County. Offal fed to hogs. Pork sold to citizens.
Williamsport	Washington County. Fats rendered. Offal fed to hogs. Pork sold to citizens.
Woodsboro'	Frederick County. Fats rendered.

BETWEEN 2,000 AND 4,000 INHABITANTS.

Chestertown	Kent County. Fats rendered. Offal fed to hogs. Pork sold to citizens.

Lonaconing	Allegany County. Fats rendered in open kettles. Offal fed to hogs. Pork sold to citizens.
Mt. Savage	Allegany County. Offal fed to hogs. Pork sold to citizens.
Pocomoke City	Worcester County. Offal fed to dogs and colored people. Fats rendered.
Waverly	Baltimore County.
Westminster	Carroll County.

OVER 4,000 INHABITANTS.

Annapolis	Anne Arundel County. Fats rendered.
Cumberland	Allegany County. Seven slaughter houses. Four feed offal to hogs. Pork sold to citizens. Drainage into Will's Creek. Fats rendered.
Frederick	Frederick County. Sixteen slaughter houses. Four render fats. Five feed offal to hogs. Four sell offal-fed pork to citizens.
Hagerstown	Washington County. Twelve slaughter houses. Five feed offal to hogs. Pork sold to citizens. Fats rendered.
Havre de Grace	Harford County. Offal fed to hogs. Did not learn destination of pork.

Considering first the towns in which no slaughtering operations are done, one observes that this list of 44 contains very few of the more important towns. Cambridge is the largest municipality on the list. If Cambridge has definitely and finally put her slaughter-houses outside the town limits a very good sanitary step was thereby taken. Three years ago slaughter-houses were not only offensive nuisances in obscure neighborhoods, but one particularly offensive slaughter-house was directly upon a principal thoroughfare, and the nature of the business was obtrusively displayed in the stream of blood, etc., running down an earthen bank into a ditch at one side of the street. Cambridge is to be congratulated upon having passed and enforced an ordinance forbidding slaughtering within the corporate limits. No town of equal size and age has been able to throw off the slaughter-house nuisance.

In this list one also finds the more recently incorporated towns which have profited by the errors of the older municipalities, and have not allowed the slaughter-houses to gain a foothold.

The larger and older towns have received the slaughter-houses as legacies from a past and less enlightened age. Meanwhile, these nuisances have become engrafted upon the political life of each town so firmly as to successfully resist any movement to exclude them or to regulate them.

It is, perhaps, not very generally known that slaughter-houses may seriously menace the health of closely settled communities. Most of the complaints against them have referred only to their offensiveness to sight and smell. The abstract shows in what manner the disposal of offal is effected in each town. It is upon the disposal of offal that the offensiveness as well as the danger of the slaughter-house depends.

Only large slaughter-houses can convert refuse into marketable products without giving rise to nuisances, and large slaughter-houses do not attempt to dispose of their offal by feeding it directly to animals. In the small slaughter-house the fats are separated by rendering in open kettle, a rude and relatively expensive way of doing this work, but practically the only mode of operating upon a small scale. This always gives rise to offensive odors, and is a common cause of complaint wherever it is done in closely settled communities.

Other portions of the refuse of small slaughter-houses in Maryland are commonly fed to hogs. This practice enables the small butcher to convert into pork materials which otherwise he would be obliged to carry away at some expense. Unfortunately the pork produced by offal feeding is never good pork, and may at times be dangerous food for human consumption. If pigs fed upon slaughter-house offal were required to have a course of corn feeding before being slaughtered the resulting pork would, if the animals were free from disease, be objectionable.

But corn feeding would not improve the quality of trichinous pork, and offal feeding is quite likely to infect pigs with trichinæ. Our habit of cooking in a thorough manner all meats has prevented any notable outbreak of human trichinosis in Maryland, but thorough cooking has also concealed the dangerous quality of much of the pork sold in the smaller markets.

Human trichinosis is probably not rare in Maryland, though only a few cases have been reported within a year. The disease is impossible of diagnosis without the microscope. Its clinical features are not very distinctive, and have not been much impressed upon medical men, so that it is likely but a small fraction of the cases occurring are recognized. The disease tends slowly toward recovery, and may be mistaken for the typhoid fever or for muscular rheumatism.

Offal-fed hogs should not be offered in the market upon the same footing with corn-fed hogs, and offal-fed pork should be inspected before being exposed for sale in the shops.

Inspection of Meats.

In the last report attention was called to the need of better inspection of the meats sold for human food in Maryland. No town in Maryland has adequate protection against diseased meats, and the more attention other States pay to the quality of their food supplies the greater grows the danger of the markets in a State which does not carefully scrutinize its food materials. Cattle which are not likely to pass the inspection at one point are sent to other places where the inspection is less rigid.

The laws of Maryland provide adequate penalties for the sale of diseased meat, but they do not provide adequate means for enforcing these penalties. A single inspector can devote but a fraction of his time to this work, and his labors can have no greater effect than whatever the moral influence of his occasional presence at the stockyards and abattoirs may be. Live cattle and slaughtered meat both require inspection, since by no means all diseased cattle are recognizable as such in life.

The principal disease found among beef cattle in the stockyards is lump-jaw, or actinomycosis. There is no means of determining whether cattle suffering with this disease are taken without the State as ordered. The strong probability is that their sale for human food is very little delayed by our methods of inspection.

In the abattoir the disease most frequently met with in the slaughtered animal is tuberculosis. Here again it is doubtful if infected portions of the carcasses are diverted from the market. It is impossible to control the disposal of diseased animals or diseased meat except every step is taken under the eye of a trustworthy and expert official.

Probably not very much harm is done to public health by the sale of unsound meat. The dangers of tuberculosis especially are much exaggerated in the popular mind, but the quality of the food supplies offered in the public markets is of great importance from other points of view than that of public hygiene, and the average quality of the meats sold in Maryland is far inferior to what it should be and to the quality of meats found in markets where rigid inspection is practiced. Furthermore, the quality of our home markets will steadily deteriorate as improved regulations come into operation elsewhere. This will be true whether the deterioration finds any expression in disease among the citizens or not.

THE TRANSPORTATION OF DEAD BODIES.

This is a subject upon which all the States need uniform laws. It concerns not only public health, but those proper human sentiments regarding human remains, which are entitled to the considerate attention of Legislatures. So long as the various States have different laws the transportation of dead bodies from one State to another is encompassed with embarrassments, difficulty and expense, which are wholly unnecessary and avoidable by compliance at the starting point with regulations uniformly in force throughout the territory to be traversed.

The burden resulting from want of uniform regulations has been long felt by transportation companies, undertakers and boards of health in all States equally, those which had regulations on the subject and those which, like Maryland, had none. The transportation companies were obliged to formulate regulations of their own adapted to the needs of the country covered by their lines. It was obviously impossible to make a set of rules for the acceptance of this class of freight which would insure the transportation of dead bodies in every direction and over any distance with anything like uniform facility, and complications of all sorts impressed upon the common carriers the absolute need of interstate agreement as to the manner of transporting dead bodies.

Undertakers, too, found that to comply with the reasonable wishes of friends concerning the disposal of their dead involved such inordinate expense, or such a multiplicity of details, as to be practically prohibitive. They even found it at times impossible to determine whether a body could be transported to the designated point upon any terms, since it was impossible to obtain information concerning the various local rules likely to affect the removal.

Boards of health, too, were constantly embarrassed by the delay in their territory of dead bodies, lacking compliance with some more or less important detail in the local laws upon the subject.

To consider these difficulties a joint convention of representatives from the National Conference of State and Provincial Boards of Health, the National Funeral Directors' Association, and the General Baggage Agents' Association, assembled in Cleveland in 1896. At this convention certain rules were formulated and were presented by a committe to the National Conference of Boards of Health at Nashville in the following year. These rules were also considered at Detroit in 1898 by the same conference, and in 1899 at Richmond. They have now been put in force in most of the States which sent delegates to the National Conference. They were adopted by the State Board of Health of Maryland on October 12th, 1899, and so far as they relate to the transportation of bodies dead of infectious disease have the force of law.

These regulations are received by the great transportation lines as a solution of many perplexities. A body prepared according to these instructions and accompanied by the proper papers, may be accepted for transportation with the assurance that it will proceed over any connecting line and through all sanitary jurisdictions without delay.

The rules regarding the preparation of dead bodies are as follows:

Rules of the State Board of Health, and American Association of General Baggage Agents for the Transportation of the Dead.

These Rules Having Been Duly Adopted and Properly Published, Have the Force of Law.

N. B.—The authority of the State Board of Health covers only the disposal of bodies dead of *infectious disease.* Rules 4 and 6 cannot therefore be enforced by the State Board of Health, though they are necessary regulations in the transportation of bodies beyond the boundaries of this State.

RULE 1. The transportation of bodies dead of small-pox, Asiatic cholera, yellow fever, typhus fever or bubonic plague is absolutely forbidden.

RULE 2. The bodies of those who have died of diphtheria (membranous croup), scarlet fever (scarlatina scarlet rash), glanders, anthrax or leprosy shall not be accepted for transportation unless prepared for shipment by being thoroughly disinfected by (*a*) arterial and cavity injection with an approved disinfectant fluid, (*b*) disinfecting and stopping of all orifices with absorbent cotton, and (*c*) washing the body with the disinfectant, all of which must be done in a manner satisfactory to the local health officer at the point of shipment. After being disinfected as above such body shall be enveloped in a layer of cotton not less than one inch thick, completely wrapped in a sheet and bandaged and encased in an air-tight zinc, tin, copper or lead-lined coffin, or iron casket, all joints and seams hermetically soldered, and all enclosed in a strong tight wooden box. Or, the body being prepared for shipment by disinfecting and wrapping as above, may be placed in a strong coffin or casket, and said coffin or casket encased in an air-tight zinc, copper or tin case, all joints and seams hermetically soldered and all enclosed in a strong outside wooden box.

RULE 3. The bodies of those dead of typhoid fever, puerperal fever, erysypelas, tuberculosis and measles, or other dangerous communicable diseases other than those specified in Rules 1 and 2 may be received for transportation when prepared for shipment by filling cavities with an approved disinfectant, washing the exterior of the body with the same, stopping all orifices with absorbent cotton and enveloping the entire body with a layer of cotton not less than one inch thick, and all wrapped in a sheet and bandaged and encased in an air-tight coffin or casket, provided, that this shall apply only to bodies which can reach their destination within forty-eight hours from time of death. In all other cases such bodies shall be prepared for transportation in conformity with Rule 2. But when the body has been prepared according to the provisions of Rule 2, the air-tight sealing may be dispensed with.

RULE 4. The bodies of those dead of diseases that are not contagious, infectious or communicable, may be received for transportation when encased in a sound coffin or casket and enclosed in a strong outside wooden box, provided, they reach their destination within thirty hours from time of death. If the body cannot reach its destination within thirty hours from time of death, it must be prepared for shipment by filling cavities with an approved disinfectant, washing the exterior of the body with the same, stopping all orifices with absorbent cotton and enveloping the entire body with a layer of cotton not less than one inch thick and all wrapped in a sheet and bandaged, and encased in an air-tight coffin or casket. But when the body has been prepared as provided in Rule 2, the air-tight sealing may be dispensed with.

RULE 5. In cases of contagious, infectious or communicable diseases, the body must not be accompanied by persons or articles which have been exposed to the infection of the disease, unless certified by the Health Officer as having been properly disinfected; and before selling passage tickets agents shall carefully examine the transit permit and note the name of the passenger in charge, and of any others proposing to accompany the body, and see that all necessary precautions have been taken to prevent the spread of disease. The transit permit in such cases shall specifically state who is authorized by the Health Authorities to accompany the remains. In all cases where bodies are forwarded under Rule No. 2 notice must be sent by telegraph to Health Officer at destination, advising the date and train on which the body may be expected. This notice must be sent by or in the name of the Health Officer at the initial point, and is to enable the Health Officer at destination to take all necessary precautions at that point.

RULE 6. Every dead body must be accompanied by a person in charge, who must be provided with a passage ticket and also present a full first-class ticket marked "Corpse" for the transportation of the body, and a transit permit, showing physician's or coroner's certificate, health officer's permit for removal, undertaker's certificate, name of deceased, date of death, age, place of death, cause of death, and if of a contagious, infectious or communicable nature, the point to which the body is to be shipped, and when death is caused by any of the diseases specified in Rule No. 2, the names of those authorized by the health authorities to accompany the body. The transit permit must be made in duplicate, and the signatures of the physician or coroner, health officer or undertaker must be on both the original and duplicate copies. The undertaker's certificate and paster of the *original* shall be detached from the transit permit and pasted on the coffin box. The physician's certificate and transit permit shall be handed to the passenger in charge of the corpse. The whole duplicate copy shall be sent to the official in charge of the baggage department of the initial line, and by him to the Secretary of State or Provincial Board of Health of the State or Province from which said shipment was made.

RULE 7. When dead bodies are shipped by express the whole original transit permit shall be pasted upon the outside box and the duplicate forwarded by the express agent to the Secretary of the State or Provincial Board of Health of the State or Province from which said shipment was made.

RULE 8. Every disinterred body, dead from any disease or cause, shall be treated as infectious or dangerous to the public health, and shall not be accepted for transportation unless said removal has been approved by the State or Provincial health authorities having jurisdiction where such body is disinterred, and the consent of the health authorities of the locality to which the corpse is consigned has first been obtained; and all such disinterred remains shall be enclosed in a hermetically-sealed (soldered) zinc, tin or copper lined coffin or box. Bodies deposited in receiving vaults shall be treated and considered the same as buried bodies.

JOHN S. FULTON, Secretary,
(*Passed October 12th, 1899.*) *State Board of Health of Maryland.*

The instructions of general baggage agents to station agents and baggagemasters are as follows:

Transportation of Deceased Persons in Baggage Cars.

To Railroad Agents, Station and Train Baggagemen:

You will in no case receive a corpse for transportation unless accompanied by a physician's, coroner's or board of health certificate, also an undertaker's certificate that the body has been prepared for burial and shipment in accordance with the rules of the State Board of Health, *nor* *will you receive it even with such certificates if fluids are escaping from the case or it has become offensive in any degree.* One *full* first-class *limited* or *unlimited* ticket will be required for the transportation of a corpse without regard to the age of the deceased, and a corpse will not be taken for transportation except there is a passenger with it in charge, and the word "Corpse" to be plainly written on the face of a local and on each coupon of a coupon ticket. A record must be made of all bodies shipped and carried, on the back of your station and trip reports, giving name of deceased, and destination.

It will be the duty of Agents and Baggage Agents to see that each burial case is properly marked on "Paster," giving date and at what station shipped, point of destination, "State," number and form of ticket, name of passenger in charge and place of residence, with name of Agent. If the corpse is destined to a point beyond the initial line, the initials of each road over which it passes must be written on the paster; also the terminal point of each road at which transfer is made with the connecting line, as shown on the coupons on the ticket.

You will see that the "Certificate of Undertaker" is properly filled out by him, and the paster is properly filled out by yourself and is securely pasted to the coffin box before it is put into the car, and the permit remaining you will hand to the passenger in charge of the corpse.

The whole form must be made in *duplicate*, either with a pen, carbon paper or simplex paper, and the signature of the physician or coroner and undertaker must be on *both* the original and duplicate copies.

The undertaker's certificate and paster of the *original*, will be detached from the physician's certificate and permit and pasted to the coffin box. The physician's certificate and the permit will be handed to the passenger. The *whole duplicate* copy will be sent to the General Baggage Agent of the initial road by first passenger train.

All this information is necessary to insure the prompt and correct transportation of the corpse.

A transit permit is obtained from the local board of health at the point of shipment. If the body goes as baggage the permit is carried by the passenger who is in charge of the body.

TRANSIT PERMIT.

This Certificate Must Be Presented to the Local Board of Health for Approval.

PHYSICIAN'S OR CORONER'S CERTIFICATE.

....189......

Name of Deceased..

(If Minor, give parent's name also.)

Date of Death..at......... ....M.

Age...................Years...................Months...................Days.

Place of Death..

Cause of Death..

I hereby certify that the above is true to the best of my knowledge and belief.

....*M. D. or Coroner.*

Residence......................County of.....................State of.....................

PERMIT OF LOCAL BOARD OF HEALTH.

This permit must be properly signed, and with physician's certificate presented to the railroad or express agent before a body can be shipped.

In the........................of........................County of........................
(City or Township.)
State of........................on the...................day of...................189......
Permission is hereby given to remove for burial at ....
in the County of..... ....State of... ....the body of
....who died at
................................County of........................on the...................
day of.................18...Aged........years........months........days. The cause
of death being........................which is a........................disease.
(Contagious or non-Contagious.)

RULE 1. The transportation of bodies dead of small-pox, Asiatic cholera, yellow fever, typhus fever or bubonic plague is absolutely forbidden.

Signed..

[If City or Town affix
Corporate Seal.]

....
Local Board of Health.

This permit and preceding certificate must be detached and delivered to the person in charge of the corpse.

If the body is going as baggage, the certificate of the undertaker and the station baggage master's description of the ticket and the route, naming all junction points, are entered on the form shown below and pasted upon the top of the coffin box.

....

This Certificate and the Paster below must be detached at this perforation and pasted to the Coffin Box.

PASTER.

Transit Permit No..........

CERTIFICATE OF UNDERTAKER.

I, (or we) hereby certify that the accompanying dead body of
....Consigned to..............................
(If a Minor, give the parents' name also.)
Address..State of..................................
has been prepared by me (or us) strictly in accordance with the rules of the State Board of Health for transportation by railway, and in conformity with said rules, as printed on the back of this Permit.

....Shipping Undertaker.
Residence..

RULE 2. The bodies of those who have died of diphtheria (membranous croup,) scarlet fever (scarlatina scarlet rash,) glanders, anthrax, or leprosy, shall not be accepted for transportation unless prepared for shipment by being thoroughly disinfected by (*a*) arterial and cavity injection with an approved disinfectant fluid, (*b*) disinfecting and stopping of all orifices with absorbent cotton, and (*c*) washing the body with the disinfectant, all of which must be done in a manner satisfactory to the local health officer at the point of shipment. After being disinfected as above, such body shall be enveloped in a layer of cotton not less than one inch thick, completely wrapped in a sheet and bandaged and encased in an air-tight zinc, tin, copper or lead lined coffin, or iron casket, all joints and seams hermetically soldered, and all enclosed in a strong, tight wooden box. Or, the body being prepared for shipment by disinfecting and wrapping as above, may be placed in a strong coffin or casket, and said coffin or casket encased in an air-tight zinc, copper or tin case, all joints and seams hermetically soldered, and all enclosed in a strong outside wooden box.

Station Baggagemen must enter hereon a description of the ticket, the exact route and via what Junctional Points the ticket reads which is held by the passenger in charge of Corpse.

Dated..190...
From..........................to..............................State.......................
No. of Ticket............................Form No. of Ticket..........................
Via..................................R. R. To.......................................
Via..................................R. R. To.......................................
Via..................................R. R. To.......................................
Via..................................R. R. To.......................................
Via..................................R. R. To.......................................
Via..................................R. R. To.......................................
Name of Passenger in charge...
Place of Residence...
Signed...Station Agent.

If the body is going by express the transit permit and the paster are both glued to the coffin box.

A duplicate of the whole is retained by the station agent or baggage man to be forwarded by the next train to the general baggage agent of the company, who in turn sends it to the Secretary of the State Board of Health.

Vaccination Certificates.

In the last annual report a form of vaccination certificate was suggested which involved a reasonable interpretation of the legal phrase "duly vaccinated." That certificate has been adopted by the school boards of several counties, and in those counties there is now a correspondingly higher immunity to small-pox. The agitation of the subject at various times and places within the past two years has drawn the attention of teachers and school officials to the subject, and inquiries such as follow are not unusually received, especially from schools situated near boundary lines.

Henryton, Md., December 15th, 1899.

Dear Mr...............

If on entering a school a pupil presents a certificate like the one enclosed and says the vaccination was efficient, what would be the advice for our school.

..............., *Teacher.*

VACCINATION CERTIFICATE.

State of Maryland, Carroll County, to wit: October 21st, 1892.

This is to certify that G. H. has been properly vaccinated.

J. W. S., *M. D.*

MARYLAND, December 16th, 1899,

DR. JOHN S. FULTON, Baltimore, Md.:

DEAR SIR—Will you kindly answer Miss S's question, and oblige,

Yours very truly,

D. L. F., *Examiner.*

The reply to this inquiry must be that the certificate submitted is not definite as to any of the proofs of vaccination against small-pox. It does not say that G—— H—— was vaccinated at any time by the subscribing physician. It might suggest that some evidence was found in the person of G—— H—— that vaccination had been done at some time by some person, or it might as reasonably signify that the subscribing physician had on the date of his certificate vaccinated G—— H——. The only evidence as to the time of this vaccination is contained in the teacher's note, and the only evidence as to possible success or failure of the vaccination comes to us at second hand from the child.

A correct vaccination certificate should bear the date of the operation and the date of the subsequent observation upon which the physician's judgment was based. We reproduce here a form of certificate which seems to furnish the definite data upon which a child's immunity or susceptibility to small-pox may be judged.

CERTIFICATE OF VACCINATION.

Public School No.—— District No.—— County——

This certifies that on——I vaccinated——with lymph obtained from ——, and that on——a typical vesicle, scab, or scar was present at the site of operation.

Signed................................*M.D.*

Address................................

The reverse of the blank bears the following:

Teachers should carefully preserve all vaccination certificates. Those which do not report the presence of a "typical vaccine vesicle, scab, or scar at the site of operation," admit a child to but one year's attendance at school. At the beginning of another term revaccination should be done.

Successful vaccination, duly certified, admits a child throughout school life.

JOHN S. FULTON,
Secretary State Board of Health of Maryland.

There has been but little difficulty in securing better compliance with the law respecting the vaccination of school children. The near approach of small-pox to the boundaries of Maryland has had a wholesome effect. So far as is known there is but one county in the State where any considerable popular opposition to vaccination exists. That is Garrett County.

Several weeks in advance of the date of the opening of the public schools, all the county school boards were reminded that vaccination should be attended to before the schools opened, and not delayed so long as to become a hindrance to the work of the opening weeks of the school year. On the day previous to the date of opening the public schools of Garrett County, a telegram was received reporting that a large number of children were unvaccinated, and asking whether the schools should be opened. Reply was made that the schools should be opened since even an outbreak of small-pox was not too high a price to pay for public schools, and that if Garrett County should elect to take such a risk, her affairs were in her own hands, so long as her neglect did not endanger the adjacent parts of the State. The School Commissioners were advised, however, to push forward the vaccination of school children as rapidly as possible.

In December a committee of the Garrett County School Board visited Baltimore to consult the State Board of Health concerning the incomplete vaccination of school children in that county. They reported that twenty-five per cent. of the children in the public schools were unvaccinated. The small-pox situation in Pennsylvania and in West Virginia was fairly put before these gentlemen, and they were urged to press the work of vaccination as rapidly as possible to completion.

On the same afternoon notification was received of the occurrence of small-pox at Lonaconing, in Allegany County. The School Board of Garrett County was accordingly notified that this circumstance gave the previous recommendations added urgency. They were instructed to notify all unvaccinated children in the schools that they need not return after the holidays unless they were, in the meantime, vaccinated. The School Board presently began to receive more or less violent protests against this action. The following letters were referred to me by Mr. U. G. Palmer, Secretary of the School Board for Garrett County. The replies of the Executive Officer of the State Board of Health are also reproduced:

POCAHONTAS, PA., December 22, 1899.

PROF. U. G. PALMER:

DEAR SIR—Received your note to-day, will do as requested. Please find enclosed term report. I read notice regarding vaccination to school yesterday, and in consequence the citizens are up in arms. They say they will not have their children vaccinated. If they are determined my school will have to be closed. There will be about 65 scholars after the holidays, and there isn't any person here to vaccinate them even if the people were willing. There is a practicing physician stationed at Finzel, but he positively refuses to vaccinate the children unless authorized to do so by the proper authorities, and armed with legal power. And, furthermore, he says that if the law is compulsory that the State should pay for the work done in that capacity. If the law is enforced it means that nearly that many children will be deprived of that much schooling. Please advise by letter to Pocahontas, Pa.

H. A. L., *Teacher.*

MR. H. A. L., Pocahontas, Pa.: December 27th, 1899.

DEAR SIR—Your letter to Mr. Palmer referred to me. Unvaccinated children must not be admitted to your school when it is reopened. If the school must be closed then close it. We did not make the law and we cannot relax it. Parents who do not want their children vaccinated know the law, and make their own choice, either to have the children vaccinated or keep them out of the public schools.

The School Board is responsible to us for the vaccination of the children, and the County Commissioners are responsible for the cost of vaccination. No physician can be expected to do the work unless payment is guaranteed, but a vaccination certificate is a necessary qualification for any child who wishes schooling at public cost.

Yours very truly,

(Signed) JOHN S. FULTON, *Secretary.*

WILSON, W. VA., December 25th, 1899.

MR. PALMER:

DEAR SIR—The people up here are not going to have their children vaccinated for they have the mumps and they don't want both. If you could let the school go on this winter, they will have them vaccinated next summer. If they have to be vaccinated the school will close. Please write at once.

W. H. K.

MR. W. H. K., Wilson, W. Va.: December 28th, 1899.

DEAR SIR—Your letter to Mr. Palmer referred to me. If mumps are so prevalent as to prevent vaccination then the schools should be closed on account of mumps. When the mumps are over you can open the schools, admitting only the children who bring vaccination certificates. The vaccination law was passed long years ago, but the mumps have just arrived. An attack of mumps need not postpone vaccination more than a week, and vaccination need not postpone a child's return to school one day.

Yours very truly,

(Signed) JOHN S. FULTON, *Secretary.*

January 12th, 1900.

Mr. U. G. PALMER, Secretary,
Garrett County School Board, Oakland, Md.

DEAR SIR—Yours received. The penalties of the vaccination law are upon school teachers who admit unvaccinated children, upon parents who neglect to have their children vaccinated, and upon physicians who refuse or neglect to vaccinate those who apply for that purpose. All the fines are for the use of the local School Board.

We went over this matter yesterday at the meeting of the Board, no other county than Garrett being under consideration. I suggest that you attend the next meeting of the Board on February 8th. We take the same common sense view of the law that you do. It is intended to prevent small-pox. But we do not think the burden of the safety of school-going children ought to be carried by part of the children, but should rest equally on all. We do think that the exclusion of unvaccinated children from school makes it almost impossible that children shall contract fatal small-pox while in school. Unvaccinated children cannot be kept off the streets nor cut of church, but they can and should be kept out of school.

If many unvaccinated children are losing their winter schooling, it can be for no reason except that their parents have not had them vaccinated. They are also losing the vaccination which the State provides as free as it does education for those who are unable to pay for it. Education is not compulsory, nor is vaccination compulsory, but the law says that children who want to go to school at public cost must be vaccinated. You, as a School Board, cannot protect the safety of the community at large any further than that the careful defense of the schools is a part of the public defense, but to that extent it does seem to us that the School Commissioners are the guardians of public health.

There may be no small-pox in Garrett County this winter, but if there should be, are you prepared to guarantee that children will not suffer? These are the young citiezns who cannot speak for themselves, but are at the mercy of their parents, of your board and of ours. I confess that I know of no other means of defending them against small-pox as sure as vaccination. It is said, in round numbers, that three thousand school-going children in Garret County are vaccinated, while one thousand are not. This is manifestly unfair. If *all* your children were unvaccinated, and your community were willing to take the full risk of small-pox, I should say that public education is too valuable to be lost on account of small-pox. But the parents who are keeping one thousand children at home say in that act that education is not worth the cost of vaccination.

Yours very truly,

JOHN S. FULTON, *Secretary.*

FINZEL P. O., GARRETT CO., MD., January 12th, 1900.

DR. JOHN S. FULTON, Baltimore, Md.:

DEAR DOCTOR—I enclose you a letter that I received from the County Commissioners in regard to your letter to Mr. Loraditch, the teacher here, that the county would pay the expenses of vaccination. I have vaccinated 35 children, and have 10 or 15 more to vaccinate. I have received no pay for this, and the parents all say, and justly too, that if there is compulsory vaccination for the children that the county or State ought to pay for it. I have had a good deal of trouble prevailing on the people to have their children vaccinated, but have succeeded in getting some vaccinated in every family around me. I do not know what the price is for vaccination, but I think the county ought to pay for it, especially as it is compulsory and the people have kicked against it so. Hoping to hear from you about the matter, I remain, Yours very truly,

F. A. G. M., *M. D.*

OAKLAND, MD., January 3d, 1900.

DR. F. A. M., Finzel, Md.:

DEAR SIR—In reply to yours of the 29th ult. will say that the children's parents will have to pay for the vaccination of their children, as the Commissioners have no power to do so.

Yours truly, A. G. R.

DR. F. A. G. M., Finzel, Md.: January 15th, 1900.

DEAR DOCTOR—If you will read that portion of Article 43 which falls under the title "Vaccine Agency" you will find that the County Commissioners are bound to pay for the vaccination of children whose parents are unable to pay. So far as you can swear to your bill you can collect it. You are quite right that the State ought to pay for vaccination which is compulsory, but there is no compulsory vaccination in Maryland. Vaccination in this State is alternative; vaccinate the children or keep them home from school.

I think if you put the matter squarely and resolutely before the County Commissioners, they will pay your small bill. Fifty cents is the sum named in the act as the fee for a vaccination. I have known other Boards of County Commissioners to refuse payment, but I do not know of any instance in which a bill like yours has been successfully contested by the Commissioners. The only means they have of avoiding such bills is to appoint regular vaccine physicians.

Yours very truly,
JOHN S. FULTON, *Secretary*.

GORTNER, MD., January 15th, 1900.

DR. FULTON, Baltimore, Md,:

DEAR SIR—The vaccination "question" is on here in this county of Garrett, and being a teacher I desire to be within constitutional law. Has the question of the constitutionality of the vaccination law ever been decided by the Court of Appeals of this State? If so, in what volume of reports may the opinion be found? Also, has it ever been decided by that tribunal whether or not the Legislature has the power to make, or require teachers to make, exclusive, what the constitution says shall be free? Also, is it the object to have the children vaccinated or to drive them out of school? If the former, why not enforce the original act relating to vaccination, which is law just as potential as that relating to or requiring a certificate for entrance to the public schools, and then the trouble about entrance to the schools could not arise.

You speak of your duty under the law. Is it more your duty to attend to the driving of uncertified children upon the street, and the punishment of teachers who will not assist you in the work, than it is to punish the parent who has a child past twelve months old and in good health and not vaccinated upon the street, or within the home and around the family hearth, if you please? Since you seem to be very much interested in the second part of the vaccination law to keep your official skirts clean, will they become more befouled by neglect in the second part than in the first part?

Show the people of your State that you are not hostile to the public schools by laying the enforcement of health laws wherever it can be done in a way, and where they will not operate in a way to drive a single needy child from the benefits of the public schools, and in this case it can be done. Why not do it?

Is there any less danger with the child at home, where it seldom, if ever, gets to town if living in the country, or on the streets, if in town, than if it be in the school under the same circumstances? Is it any more our duty as teachers to send a child home unless it has a certificate of vaccination than it is your duty to see that every child of twelve months or over in this State be vaccinated? That is, provided it is your constitutional and lawful duty to see that we obey the law. I do not believe the law is constitutional, since two States have so decided similar laws, and another one, to my personal knowledge, abandoned its enforcement as a result of those decisions, and I shall act accordingly.

Hoping to hear from you relative to the first two questions, and to receive a reply thereto, I am

Your obedient servant, I. C.

January 16th, 1900.

Mr. I. C., *Teacher*, Gortner, Md.:

Dear Sir—Yours of Jan. 15th at hand, and replying have to say that your whole duty as a teacher in relation to the vaccination of school children is found in Section 31 of Article 43, (Sec. 7, Chapter 257, Acts of 1872.) The State Board of Health has not laid these injunctions upon teachers nor upon school boards. The purpose is to protect the children in the public schools from small-pox.

It is not at present the business of teachers or school boards, or health officers, to inquire into the constitutionality of the law. We are all bound to comply with the law so long as its constitutionality, affirmed by the vote of the Legislature and the approval of the Governor, remains unimpaired. I have a letter from a lawyer on the question of constitutionality.

Yours very truly,

John S. Fulton, *Secretary*.

Mr. I. C., Attorney-at-Law, Gortner, Md.: January 16th, 1900.

Dear Sir—I have yours of 15th inst., and replying have to say that the validity of the several acts making up the law of Maryland relating to vaccination has never been attacked.

To your question—whether the Legislature can make exclusive what the constitution says is free—I reply that education is free in this State to all healthy children above the age of six years, of sound mind, and vaccinated.

To your next "also"—I reply that the laws of Maryland and the Constitution offer to every indigent child both education and vaccination at public cost, and that both are valuable gifts to the citizen, and profitable investments for the State.

The only duty of the State Board of Health involved in the law under consideration is to maintain the immunity of children to small-pox. An unvaccinated child is no safer upon the streets than at school, but the school is safer.

My private opinion is that public education is too valuable to be lost to the youth of our State even if we had to pay the price of many young lives for it. But it is unnecessary to pay such a price and the security against small-pox is very cheap. The question concerns not the value of public schools, but the value of children.

We hold the open and free schools to be worth considerable loss of life from small-pox. You seem to hold the schools of less value than the cost of vaccination. Garrett County governs herself. Get your School Commissioners and your Local Board of Health together. If they agree that children are so cheap the schools can be run on that principle, the State Board of Health will not interfere until the penalty of that view falls in part upon some other portion of the State.

Respectfully yours,

John S. Fulton, *Secretary*.

Small-Pox.

Late in December, 1898, cases of variola occurred in Hagerstown. This was the first invasion of the State, and it was well and decisively met by the local Health Officer, Dr. J. McP. Scott, who was able not only to hold the infection fast at one point, but to put it out without disturbing the public mind even in the slightest degree. The brief note upon this outbreak contained in our last report comprised the whole story of this outbreak.

THE OUTBREAK AT POCOMOKE CITY.

The outbreak at Pocomoke City was, at the time of its discovery, somewhat threatening. The story of the outbreak is told in the report of Dr. C. F. Hargis among the reports of local health officers. It is only necessary here to give due credit to that officer for effective work.

When the first case was discovered the town was without a health officer. The Mayor being notified at once assembled the town council, appointed a health officer and notified the State Board of Health. The County Commissioners also assembled promptly on the occurrence of this emergency, and at a joint meeting, at which the boards of health of the town, county and State were all represented, proper measures for the restriction of small-pox were put into operation. The deliberations of these gentlemen in the presence of a problem which was quite new to nearly all of them, were marked by intelligent appreciation, breadth of view and promptness of decision, which fell into pleasant contrast with the narrow and unintelligent make-up and dilatory habits of certain other boards governing the sanitary affairs of other localities.

One of the two deaths from small-pox which occurred in Maryland during the year happened at Pocomoke City, in the case of a young, colored, pregnant woman, unvaccinated. The only other fatality was in an unvaccinated infant in Baltimore City.

The vaccination done in Pocomoke City and the vicinity during this time was very thorough, and left an inconsiderable residue of unvaccinated persons. Revaccination was also general.

The promptness and thoroughness of the local sanitary work kept down popular fear and the injury to local business interest was small and transitory. As is usually the case, the symptoms of panic were most apparent among the wholly unprepared communities of the adjoining County of Somerset. The County Commissioners of Somerset had never assumed any of the duties of a local board of health. Indeed, they had on many occasions distinctly repudiated all such obligations. The proximity of Pocomoke City to Princess Anne, the county town of Somerset, aroused the town commissioners of Princess Anne, who passed a general vaccination ordinance and called upon the County Commissioners for assistance. In the appeal to the County Commissioners, the State Board of Health joined, and it is believed that the County Commissioners knew what was asked of them. They appointed a vaccine officer and showed other symptoms of wakefulness.

THE OUTBREAK AT CUMBERLAND.

The outbreak at Cumberland was discovered by Dr. Miller, who reported it to Dr. Chas. H. Brace, Health Officer for Allegany County, who in turn telegraphed the information to the State Board of Health.

The first case was in the person of a white married woman, who could not trace her infection to any source. The inmates of the house were vaccinated and kept under observation, the sick person was carefully isolated and the house quarantined under guard. A subsequent case, traceable to this house, occurred in another part of Cumberland on a business street. This house was isolated by the construction of a fence and kept like the other one, under guard. The number of cases comprising this outbreak was small, numbering not more than four persons.

No account of the occurrence has been given to the State Board of Health, though a report was several times promised, and, if forthcoming, would probably have shown that the local health officer for the City of Cumberland managed the outbreak well.

THE SPARROW'S POINT OUTBREAK.

This outbreak is spoken of in the report of Dr. Stevenson, Health Officer for Baltimore County. It was his first engagement, and he was able to conclude it in a very satisfactory manner.

This outbreak occurred under circumstances particularly favorable to restrictive methods. The community, of about three thousand souls, occupies land belonging to the Maryland Steel Company and derives its whole support from that wealthy corporation. The influence of the company, added to the authority of the sanitary officers, is sufficiently powerful to apply in a thoroughly effective manner whatever means are available for the restriction of infectious disease. The management of the company is in strong hands, and but for failure to notify the first case, and other errors detailed elsewhere in this report, the extinction of this outbreak with one or at most two cases would have been easily accomplished.

When control of the situation was undertaken by the Board of Health of Baltimore County on May 12th, the co-operation of the company was fully pledged, but the extent of the infection was unknown, and determinable only by house to house inspection. While the State Board of Health assisted in the work of suppression as far as seemed necessary, the chief burden of cost fell upon the local board of health and to them is due the credit of preventing an epidemic, which on the 12th of May was certainly impending.

The company is said to have spent much money, but their expenditure was the price of delay rather than the cost of small-pox.

Other Outbreaks.

Two exceedingly suspicious cases occurred near Bowie, Prince George's County, in February, 1899, in the persons of two young ladies, one of whom had been employed as a saleswoman in Washington, though it could not be ascertained that she had been in contact with any case of the disease. These were very mild cases, indeed, but it cannot be said that the diagnosis of small-pox was beyond doubt. The weight of evidence seemed to favor that view. The cases were carefully isolated, and the family must be given great credit for patiently submitting to the recommendations of their family physician and the Secretary of the State Board of Health, especially in view of the doubt which was frankly confessed to them.

Near Cox's Station, in Charles County, a suspicious case was reported to the State Board of Health in September, 1899. It was promptly investigated and found to be a case of mild small-pox in a colored girl. Another case probably occurred in the same house, though the illness was very slight. The only circumstance which seemed likely to be connected as a cause with this slight outbreak was that a package of second-hand clothing had been received from Washington about four weeks before the occurrence of the sickness. There was in this bundle a dress, which was worn but once, and then by the girl who twelve days from that date had the prodromal symptoms of small-pox.

This family lived in an isolated house about half a mile from the village. There were but four persons in the house. A committee of citizens undertook the responsibility of maintaining the family during the necessary quarantine. A general vaccination was rapidly accomplished, and no spread of the disease occurred.

As to Small-Pox in General.

Small-pox has been quite prevalent in various parts of the country for nearly two years past, and has been epidemic at various times and places in Virginia, West Virginia and Pennsylvania. A somewhat serious epidemic prevailed in Alexandria last winter, and, as was expected, the City of Washington had a considerable number of cases.

Maryland had the good fortune to escape without a single alarming outbreak, and except at Sparrow's Point, had no very expensive or arduous work to do against it. If this good fortune is to be attributed to one influence more than another, it was probably due to the prompt recognition of the disease in its first appearance, and this in turn is ascribable to the carefulness of practicing physicians. Small-pox has of late years grown so unfamiliar that the very great majority of physicians in this State have never seen a case. Those who saw their first cases of the disease during the past year could not of course be expected to make the diagnosis with confidence, but they all had the courage and good sense to avoid the common blunder of mistaking the mild cases for chicken-pox. This error has been the chief contributor to epidemicity of small-pox in the United States. In some sections of Pennsylvania particularly the practicing physicians having committed this mistake, have clung to it with pertinacity, and in some instances with such blind obstinacy as to thwart all the efforts of the health authorities to control the disease. No single instance of this error has happened in Maryland, and the fact speaks much in praise of the intelligence and honesty of those physicians under whose observation the first cases fell.

The diagnosis of small-pox is by no means always easy even to those who have had large experience, and probably chicken-pox resembles the disease more than any other eruptive disorder.

Typhoid Fever.

In the report for 1897 we offered as an estimate of the annual mortality of Maryland 880 deaths at the lowest, and 1240 as the highest number which the available data indicated. In the report for 1898 we said that extended observation showed the true typhoid mortality to lie between these two extremes. Figures for the year ending June 30th, 1899, show that certainly no fewer (and probably a hundred more) than 904 persons died during that year of typhoid fever. The only correction which this estimate contains is that for the 45 per cent. shortage of the returns and for the typhoid content of the "Unknown" column. If the probable cases which are included in other mortality columns were added, the total number would be considerably increased.

To show the waste of life and health entailed by typhoid fever, let us imagine that all the cases of typhoid fever for a year should happen at one time and in one place, and should be cared for in somewhat the same manner, that is in dwellings. Nine hundred and four deaths suggest the sickness of not less than ten thousand persons. Ten thousand persons having typhoid fever would require for housing a city of the size of Hagerstown. Every five sick persons would give steady employment to two nurses and a laundress. Here, then, are 8,000 more inhabitants for an imaginary City of Typhoid. For every twenty patients we will allow one physician, adding 500 more inhabitants. The average duration of a case of typhoid fever is 42 days, so that for six weeks a population of 18,500 persons would have to be supported, without in that time producing one penny worth of anything. If it cost to supply these people with the necessaries of life a little more than it costs to support the paupers at Bayview Asylum and a little less than it costs to support the charity patients in the hospitals, this City of Typhoid would cost in six weeks $222,000. If the doctors and nurses would considerately accept such wages as are ordinarily paid to cooks and laundresses, $153,000 would have to be added to the expense account.

So far we have not charged up anything for the cost of death. Funerals would occur in that city at the rate of something over 150 a week. At the price of a pauper funeral the 904 deaths would cost $5,624. If each citizen who died can be said to have been worth the price of a good cow, $40.00, the cost of the deaths will be increased by the sum of $36,169, bringing the total cost of running the City of Typhoid for six weeks up to $416,784. If these citizens are worth less than forty dollars each, it would be cheaper to butcher them all at the beginning of their illness. They could be butchered and buried for $62,500, or the remains could be sold to the tankage men at three or four dollars a ton, which would save the $60,000 funeral expenses and yield quite a profit.

If these latter suggestions in the direction of economy are not sufficiently revolting, there is but one more revolting manner of dealing with the problem of typhoid fever, and that is to permit this disease to go on year after year, collecting its ghastly tolls from the youth and vigor of the State, and holding its still more hideous menace over the thousands whom it does not quite destroy.

The appeal here made to figures is based upon the lowest cost which the number of cases of typhoid fever can be estimated to inflict. The average cost of an illness from typhoid fever on this estimate is but twenty-two dollars. The mere idleness of a citizen for forty-two days costs more than that. Necessary attention to each person sick with typhoid fever requires four-fifths of the time of a healthy person, and the thirty-three days of labor here involved are worth more than twenty-two dollars. Nevertheless the $220,000 which barely suffices for the support of those sick with typhoid fever, for an unproductive period of forty-two days, is a large enough sum certainly to arrest the consideration of the most thoughtless. If the average citizen were worth as much as a good slave, we should have to add four times as much for the cost of the 904 deaths. If the average citizen was worth what it costs a negligent corporation to kill one, the cost of death alone would be $470,000 a year.

One million dollars a year is under the total annual cost of typhoid fever in Maryland, and this waste of wealth is avoidable. It is possible to cut down the sickness from typhoid fever to one-tenth of its present measure. This work does not proceed upon theory nor without example. The story of how typhoid fever has by simple means been cut down to one-tenth or even one-twentieth of its magnitude when unrestricted, has grown tiresome from often telling. Its total extinction has more than once been accomplished in cities equal in population to the whole of Maryland.

Typhoid fever is a water-borne disease, and except as drink or food does not gain access to the human body. The private wells in Maryland cause probably three cases of typhoid fever for every single case attributable to a public water supply. The efforts of the State Board of Health to instruct the people of the State upon the care and protection of drinking water have, perhaps, not been fruitless.

An instance in which the efforts of the local Board of Health to put down an epidemic of typhoid fever were met by violent and successful opposition, occurred in 1899 at Towson. In former years Towson visited their severest displeasure upon those who ventured to point out the causes which reproduce typhoid fever there every year. In June, 1899, reports of typhoid fever in that town caused the Health Officer of Baltimore County to begin an investigation. In this the State Board of Health was asked to assist. There was little new to discover, the causes of typhoid fever having been repeatedly demonstrated in previous years. A considerable number of wells were examined, and some of them found very bad. This information was conveyed to the sanitary commissioner of Towson, who for some reason declined to make any use of it. The facts were laid before the County Commissioners, who instructed the County Health Officer to do whatever seemed necessary to prevent an epidemic. It was determined to send to the owners copies of the reports upon their private wells, advising them concerning the dangers of polluted water, and to place placards upon all polluted wells which were so situated as to be used by many families. These placards were promptly removed from the pumps, so that it seemed impossible by this means to inform the public concerning the danger of the public pumps. It was then determined, under legal advice, to serve notices upon the owners of public pumps, ordering that they should be either dismantled or locked. This notice was not in any way complied with. Two citizens who had polluted pumps which were largely resorted to were arrested on complaint of the County Health Officer, and were held by the magistrate to await the action of the Grand Jury. The facts were laid before the Grand Jury at the December term, but nothing issued. Meanwhile the typhoid fever did its usual year's work, and new cases have continued to appear up to this date (Jan. 2nd, 1900).

Some thirty cases were known to have occurred before October 1st among the twelve or fifteen hundred inhabitants. The popular clamor against the health authorities had a noticeable effect upon the local medical men, some of whom probably did not report all the cases which occurred. The action of the sanitary commissioner of Towson in refusing to take any steps to prevent the spread of the disease is not to be explained by fear of popular censure. The notoriety which all the circumstances obtained through the misguided opposition of the people too plainly indicated sanitary reforms, worked considerable damage to real estate interests, and those who invoked this unfortunate notoriety loudly ascribed to the health authorities both the intention and the act of inflicting this injury. It is very likely that the injury was done, and if so, it is certain that the effects will persist as long as public pumps supplying water fouled with human excrement are allowed to stand in public places and offer their treacherous invitation to all that pass. The typhoid fever which will continue to appear can not, any more than a burning house, be concealed, and the causes of the typhoid will be pointed out to the public as certainly as they are known, so long as the Local Board of Health desires information which the State Board of Health can give.

This narrative illustrates the futility of undertaking in any locality work for which there is no popular demand. It is inconceivable that those who were affected by the prevalence of typhoid fever were indifferent to the efforts of the Local Board of Health to stop its further spread, but they seemed to lack either the influence or the megaphonic qualifications of those who denied both the existence of typhoid fever and the necessity of restrictive measures.

It is impossible for a large epidemic to occur in any commuity where no effort is made to prevent the spread of a perennial infection, such as typhoid fever. The fever can only injure each year those who are susceptible, and one of the results of unopposed typhoid fever is the acquirement of immunity by a fresh portion of the population every year. It of course costs a good many lives to produce this general immunity to typhoid fever, but as the loss of life is distributed evenly over the successive years, the waste makes no considerable impression upon the popular mind. If we could arrange that all deaths which will surely occur in Maryland in 1900 should all fall in the same week, there is not a county in Maryland which would not send up a lamentation such as has not been heard since the first Holy Innocents' Day.

A singular, perhaps stupid, objection to the employment of public measures against typhoid fever was encountered during the year in a county whose persistent neglect of sanitary work has been the subject of much animadversion in this and previous reports. We were told by a tribune of the people, definitely charged by the law and sworn to defend public health, that the medical men of the county could and would do whatever is necessary to prevent the spread of typhoid fever, and that county funds ought not to be spent upon such work. If one met with ignorance of this variety and depth in a grammar school-boy, there are resources against it, but how shall one deal with such infantile perceptions on the part of a man chosen by the people to be a guardian of their safety. It is easy to reply that the medical men cannot and will not do any such thing, because it is no part of the work which the public expect of them or pay them for. The county commissioner easily settles this statement by saying that he had typhoid fever in his family last year and the doctor was entirely successful in preventing it, and that he believed that if he should have typhoid fever in his family again next year his physician would be able to repeat his success. Such a man should write the praise of those volunteer fire brigades who prevent the combustion of incombustibles.

While the prevention of an epidemic disease such as typhoid fever is a public duty, much can be done by private individuals whose households, through the neglect of public officials, are invaded by typhoid fever. The attention of a local health officer should at once be called to such an occurrence, and he should be asked to search out the cause. If his investigations should include any water supplies, the aid of the State Board of Health can always be had for the asking. The State Board of Health cannot, however, make personal investigations of small outbreaks of disease, nor send an inspector to do the work which properly belongs to the local health officials.

From the moment when a case of typhold fever is recognized, the customary water supply of the family will remain under suspicion until it is proven to be harmless. Pending an examination into its quality, all the water intended for drinking should be boiled and cooled in clean vessels. Even if the domestic water supply is found to be of good quality, great care should be taken to prevent its becoming infected. The infection escapes from the sick body in the discharges of the bowels and bladder, and the well cannot be considered safe from infection if these evacuations are thrown upon the ground without disinfection. Urine and feces can be rendered harmless in an hour by applying to them an equal quantity of a solution of chloride of lime (one pound to a gallon of water) or milk of lime (one quart of quick lime to a gallon of water) or a five per cent. solution of carbolic acid.

The bowel discharges of a case of typhoid fever can be considered as no longer infectious after convalescence is well established, but the urine continues to carry the bacillus of typhoid fever sometimes for months after recovery is apparently complete. Persons recovering from typhoid fever should, therefore, be instructed to be very careful not to void their urine in such a manner or place as will admit any risk of infecting any one. By scrupulous attention on the part of infected families to these discharges it is possible to defend both the family and the community, but it should be remembered that the occurrence of the first case which renders these domestic precautions necessary is an injury inflicted upon the household by the neglect of society. Every citizen to whom this infection happens has a right to regard his illness not as a misfortune only, but as a positive injury which only differs from crime in that it was not deliberately aimed at him.

Tuberculosis.

The conception that tuberculosis may be prevented cannot yet be said to have fixed itself in the public mind, and until that view has been widely propagated, the duty of preventing tuberculosis will not weigh upon the public conscience. The people of Maryland believe fully in the prevention of small-pox, and have witnessed the proof that it is amenable to restrictive measures wherever it has appeared. Many communities have also tested the effectiveness of sanitary work against diphtheria and scarlet fever. In a few instances public proof has been made of the preventability of typhoid fever. Nowhere in Maryland has any attempt been made to limit the ravages of consumption. And indeed it is an appalling task.

Nevertheless the problem is being attacked elsewhere, and we in Maryland must begin soon to consider it. In Germany the prevention of tuberculosis has been undertaken on a large scale. In England active preparations are going forward. In this country Massachusetts has spent a great amount of money in an ineffectual attempt to control the tuberculosis of dairy cattle, but has obtained very profitable results from much less expenditure of funds upon a State sanitarium for consumptives. A bill now pending in the legislature of New York, and likely to pass, appropriates $200,000 to the construction of a great sanitarium for the cure of tuberculosis. Michigan has been able to demonstrate a measurable restriction of tuberculosis due simply to the instruction of infected persons and families concerning merely the personal and domestic precautions, which are applicable in the home care of consumptives. Having this definite basis of small success to proceed upon, Michigan is now considering the establishment of State sanatoria for the care of consumptives.

No State has hitherto assumed the cure of disease as a public obligation, but the problem of tuberculosis forces the question of cure upon the State as a necessary part of any plan of prevention. Tuberculosis is a disease of extremely slow progress, difficult or even impossible of recognition in its earliest stages, permitting those who suffer from it to continue long at their ordinary avocations, and maintaining in one living, working body a focus of infection for years and years.

Consumptives cannot be isolated, as lepers are, for life. They are too numerous. They cannot be isolated as other infectious diseases which run a brief course and threaten public safetv for but a short time. The speediest possible cure of early cases and the segregation and maintenance at public cost of late and incurable cases are the best means of controlling the spread of this disease.

Since the best known means of curing consumption is found in the hygienic-dietetic treatment, the resources of medicine are not within the command of ninety-five per cent. of those affected by the disease. The cure of consumption upon a large scale cannot, therefore, be even attempted except at public cost, or through large private philanthropy. The State cannot be moved to take up such work upon philanthropic grounds alone. The State's interest in her citizens is purely that of profit and loss, and it is therefore necessary to show that the expenditure of public funds in the prevention of tuberculotis will pay.

One can at this time do no more than indicate what are the present losses from tuberculosis and in what direction profits may be expected. Seventy-five per cent. of all consumptives are now maintained at public cost during some part of the course of their disease. Ninety-five per cent. of consumptives are receiving no systematic or rational treatment. All of these are centers of infection in families, factories, schools, offices, in private and in public, everywhere. Probably ten per cent. of them are curable by a course of dietetic treatment of from six months to a year's duration. In another twenty-five per cent. the disease could be arrested if not cured by the same means. Of the remainder, all who are strong enough to go to a sanatorium and remain there for three months would in that time learn such habitual care of their expectoration as would render their return to family life far less dangerous to others. In other words, out of every one hundred consumptives taken to properly equipped sanatoria, ten would in a year return in sound health to wage-earning, twenty-five others would become self-supporting again and free from active infection, and all would have learned not to infect those with whom they came in contact. One hundred sources of infection would have been absolutely cut off for a year.

It is clearly recognized that Maryland is not yet prepared to undertake the control of tuberculosis upon a large scale, but it is not too early to make an experiment in this direction. If a well-planned effort were made to control tuberculosis in one small, well-selected area, we might produce a convincing illustration of the possibility of restricting tuberculosis, and might "try out," so to speak, the means which have been found effective elsewhere.

DIPHTHERIA.

Eighteen hundred and ninety-nine was a diphtheria year in Maryland. Considerable outbreaks and even small epidemics have occurred in various parts of the State. The conditions have been extremely favorable for a great epidemic in Baltimore, and the fact that it has not assumed more alarming proportions cannot fairly be ascribed to any other influence than to a well-planned, well-executed and unremitting campaign against it by the Health Commissioner of Baltimore City. With the history of 1897 and 1898 in mind, and taking into account the wide prevalence of the disease in surrounding counties, Baltimore had every reason to expect extraordinary losses in 1899 from diphtheria, and the measures which were taken in view of these considerations were unquestionably, and in a marked degree, successful.

The mortality in the State has not been so large as a similar amount of sickness in previous years would have led to. This is due to the present, quite general use of antitoxin by the practicing physicians of this State. Extremely little dissent is heard in Maryland concerning the value of this specific remedy, and this circumstance is exceedingly creditable to the medical men of the State. Since local boards of health do not send full reports of prevailing sickness to the State Board of Health, we cannot estimate the saving of life which has been effected. From our laboratory reports and from the sickness cards returned to us we know something of the progress of the disease in Hagerstown and in Frederick City, both of which were heavily visited with diphtheria during the year. The losses from the disease were not heavy in either place. Several county boards of health provide antitoxin for indigent patients, Cecil, Queen Anne, Talbot, Prince George, Howard, Anne Arundel, and perhaps one or two others. An effort was made to get an appropriation for this purpose from the County Commissioners of Montgomery, but the result of the attempt is not known. The Carroll County Commissioners are said to have appropriated money for antitoxin, but in the absence of proof this may fairly be doubted, since ten doses of antitoxin would cost them as much as they are willing to pay their one health officer for a year's work.

The people of this State are, on the whole, more impressed with the claims of preventive medicine in respect to diphtheria than with regard to any other disease, except, possibly, smallpox.

Maryland Public Health Association.

The Maryland Public Health Association has held two meetings since the last report and has witnessed the success of some of the enterprises which it helped to forward.

For various reasons it is impossible to publish the proceedings of the Association in the present report, but a few of the papers which are best adapted to our work of popular education in the practice of hygiene are printed at the end of this volume.

The meetings of the Association continue to arouse much popular interest, and each one leaves an enduring impress upon the public mind.

In but one respect has the Association failed of the purpose for which it was organized—it is not as well attended as it should be by the practical working health officers. This is chiefly due to the parsimony of local boards of health, who will not make the trifling appropriations necessary to enable their executive officers to attend the meetings.

The success of the Maryland Public Health Association, as a body of unofficial sanitarians, has attracted attention in other States. A full report upon our Maryland Association was made to the Conference of Associated Health Officers of Pennsylvania a few months since, and it was determined to engraft upon their own some of the features of our organization. We shall, I suspect, have to go to Pennsylvania to learn how the practicing official sanitarians may be induced to come together once or twice a year for mutual improvement.

The Emergency Fund.

The sum of one thousand dollars placed at the disposal of the State Board of Health by his Excellency, Governor Lowndes, remains unimpaired at this date. The last expenditure from this fund in May, 1897, has been more than replaced by interest upon the deposit.

REPORTS OF LOCAL BOARDS OF HEALTH.

COUNTY REPORTS.

ALLEGANY COUNTY.

DR. JOHN S. FULTON, *Sec'y State Board of Health.*

DEAR SIR : I desire herewith to make my report for 1889:

This year we have been particularly free from violent epidemics, and very few nuisances have been brought to my attention.

In the matter of vital statistics, I would state that, in my opinion, they will not be returned in full until some remuneration is made the physicians for so doing. I would also suggest that a fair compensation to the local registrars for recording the same should be allowed.

I find that I have registered 357 births and 128 deaths, hardly half of the number of each that have occurred.

I think that there should be a burial permit section inserted in the Registration Law, making it imperative that the certificate pass at once under the scrutiny of an official before the body can be interred.

There have been reported to me the following contagious diseases—all of a mild form:

Near Cumberland—Scarlet fever, 1; cerebro-spinal-meningitis, 1; typhoid fever, 2. Barton—Cerebro-spinal-meningitis, 1; typhoid fever, 8. Ellerslie—Diphtheria, 11. Lonaconing—Cerebro-spinal-meningitis, 2, with one death; typhoid fever, 1.

I have investigated a number of minor nuisances throughout the county, and succeeded in having them abated without difficulty, with the exception of one case at Mt. Savage, which is now pending before the Lower Court.

Respectfully,

C. H. BRACE, M.D.,
Cumberland, Md. *Health Officer for Allegany County.*

[Reports on file at the office of the State Board of Health show that between July 1st, 1898, and June 30th, 1899, there died in Allegany County (including the towns of Cumberland, Frostburg and Lonaconing—Diphtheria, 6; infantile diarrhœa, 19; pneumonia, 15; tuberculosis, 34; typhoid fever, 13.—M. L. R.]

ANNE ARUNDEL COUNTY.

DR. JNO. S. FULTON, *Secretary State Board of Health.*

DEAR SIR: January 2d I visited Menzel's dairy, about three miles from Annapolis, to inspect his farm to find some clue to the mysterious Holmes poisoning case, which occurred in this city. One child died, Holmes was insane for several weeks, and others were sick. Nothing was ascertained to clear up the case.

February 22, Dr. R. A. Hammond, "Jessups," reported a case of diphtheria, colored female, aged twenty years.

March 6th, Dr. J. B. Robinson reported one case of diphtheria near Brooklyn, also another February 24th.

May 25th, Mrs. Mary A. Murray, colored, midwife, registered. Postoffice, Shadyside.

June 21st, visited Brooklyn to investigate pig-pens, houses, alleys and lots; some were bettered, others will probably be settled in court.

June 25th, Dr. T. W. Linthicum reported two cases of diphtheria at the residence of Mrs. T. John Bowie, Annapolis Junction. June 30th the place was visited and disinfected.

July 6th, one case of typhoid fever occurred in my practice, colored boy, aged fourteen years. Visited Dr. Thos. H. Brayshaw, Glenburnie, to investigate six cases of diphtheria in the Miller family. Three deaths occurred.

July 10th, visited and disinfected the house occupied by Miller.

August 4th, visited Annapolis Junction to investigate three men who escaped the quarantine at Norfolk.

August 10th, Dr. R. A. Hammond reported Robert Oden, colored, of Harman's, had diphtheria, and he had immunized five others in the family.

August 23d, visited the Martin Wagner Co., to examine the water supply. Dr. Penniman reported the sample good.

October 30th, visited the residence of Mr. Charles Duvall, St. Margarets, to investigate cause of four cases of typhoid fever, all adults. Water was examined and found bad.

Very respectfully,

J. M. WORTHINGTON, M.D.,

Annapolis, Md. *Health Officer for Anne Arundel County.*

[Reports on file at the office of the State Board of Health show that between July 1st, 1898, and June 30th, 1899, there died in Anne Arundel County (including Annapolis): Diphtheria, 8; infantile diarrhœa, 13; pneumonia, 18; tuberculosis, 32; typhoid fever, 8.—M. L. R.]

BALTIMORE COUNTY.

This report was made to the Baltimore County Board of Health by Dr. H. Burton Stevenson, Secretary, on October 11th, 1899:

In presenting the first report to the first meeting of a Local Health Board in Baltimore County, your Secretary wishes to call your attention to the present sanitary condition of the county, and the laws regulating sanitation (their advantages and defects), the present imperfections in the registration of births and deaths, and to offer a suggestion as to a remedy, to call your attention to the neglect of the infectious disease law, and the danger and cost to the county from that neglect.

Section 12 of Article 43, Revised Code of 1888, directs that the local boards of health for each county shall take cognizance of all unhealthy nuisances within the limits of its jurisdiction. Under this section I have abated about forty nuisances complained of, most of which has been done by correspondence. I have had recourse to law in but two instances, the cases now pending for the Grand Jury.

Section 14 of Article 43, Revised Code of 1888, makes it incumbent upon me to take all proper steps to suppress all existing epidemics, or to prevent an invasion by an epidemic into my jurisdiction, and empowers the Secretary of the State Board of Health to act with me and to exercise all the powers of the State Board of Health.

Under this section the epidemic of small-pox in May at Sparrow's Point was handled. We had fourteen well-developed cases, with no deaths. Vaccination of the whole town was ordered by me and endorsed by the Executive of the State Board. Those exposed to the disease were isolated and kept in an improvised detention hospital for eighteen days. The county officers lending aid in this matter, a complete vaccination of the inhabitants by your executive and the Maryland Steel Company, a thorough fumigation and cleaning of the infected area was sufficient to break up the epidemic.

Several epidemics of diphtheria were handled with almost as good results. Sparrow's Point, however, still has some diphtheria. The mingling of the population at work and impossibility of enforcing a complete isolation made this epidemic hard to handle.

I am now endeavoring to break up annual epidemics of typhoid fever in several thickly populated localities of the county.

Chapter 312 of the Acts of 1898 gave us the first law providing for the registration of births. This is the first attempt of the State to take legal notice of the birth of its citizens. I have devoted much time and energy to perfect these records, that posterity may have as complete records of its ancestry as the Record Office gives us of title to property. The records are still incomplete, although a fine for failure to report a birth, by physician or midwife, can be collected.

I would suggest that the next Legislature be requested to add a section compelling the health officer or local registrar to issue birth certificates, and compel the parent or guardian to show the certificate upon application for admission to schools (or to a minister of the gospel or priest upon application for christening).

The same chapter providing for birth registration, makes compulsory the reporting of the death of citizens of the State by the doctor, coroner, or undertaker, and the fatal disease, and provides for a record of the same to be kept for the use of persons tracing ancestry, as well as mortality of diseases, for use as proofs of claims for insurance, pensions, etc., and gave a fine for failure to comply.

The correct estimating of the relations between births and deaths, or, in other words, the relative increase or decrease in the population of the county depends upon the completeness of these records. The value to the election officials is inestimable.

In order that these records may be complete I suggest that the next Legislature be asked to add a section to the law providing for a burial permit, and make it unlawful to bury a body without a permit from the health officer of the county. This system is in use in Baltimore City, where all burial permits are issued by the Health Commissioner.

Chapter 346, of the Acts of 1898, improved upon the laws back to 1890 relating to contagious and infectious disease. This chapter makes it incumbent upon physicians in attendance, hotel-keepers, keepers of boarding-houses, superintendent, manager or director of a public or private institution, to notify the local health officer of the existence of an infectious or contagious disease under his care or within his house, or under his management, in default of which the chapter provides a fine of not less than $50.00 or more than $200.00 (This law has no defects.) It, however, is not complied with by all persons concerned. Its advantages to the public health, public schools and public taxpayers is inestimable.

The neglect to report contagious disease in a neighborhood allows one case to develop into an epidemic, and makes the expense of controlling it great. The attendance at school is lowered; the death-rate increased in proportion to the death-rate of the disease. I would suggest that this Board take cognizance of all neglects to report contagious diseases and prosecute accordingly. An example or test case is now in the court, and a conviction will benefit public health, public schools and lessen expenses of the Health Board, and consequently taxes.

I wish to call the attention of the Board to the following action of its executive officer:

Every registered physician whose address was obtainable has been notified of the laws mentioned above and supplied with the necessary material for making reports.

I have asked the School Board to send copies of the Infectious Disease Law, furnished them by the State Board of Health, to every public school teacher in the county, and have asked the School Board to notify all teachers to enforce the vaccination law.

I would respectfully suggest to your body that in order to keep the records of this office complete that you instruct the local sanitary officers of Canton, Highlandtown and Catonsville to report all vital statistics to the Executive Officer of the County Board of Health, thus having but one place for the recording of the vital statistics of the county.

I further suggest that a member of the Baltimore County Board of Health be sent to the meeting of the Public Health Association in Baltimore, November of this year, as a delegate to represent this Board, and to work for improvements in the health laws of this State and County.

I suggest that the next Legislature be requested to repeal Section 1, of Chapter 460, repealing Chapter 614, Sections 1, 2, 3, 4, and to re-enact Sections 117, 118, 119, 126, 128, 131 of Article 3, Code of Public Local Laws, title "Baltimore County," subtitle "Health and Sanitary Officers," concerning Canton, Catonsville, and Towson.

The following table shows the number of births, deaths and infectious diseases reported:

	Deaths.	Births.	Smallpox.	Measles.	Whooping Cough.	Scarlet Fever.	Typhoid Fever.	Diphtheria.	Mumps.
May	36	46	14	1	2	1	......	2	1
June	30	54	......	1	15	1	5	123	......
July	52	61	......	6	7	3	8	34	......
August	21	50	......	16	......	5	19	34	......
September	34	66	......	......	......	4	18	15	2
Totals	173	277	14	24	14	14	50	208	3

Deaths from diphtheria, 13; typhoid, 5; consumption, 17.

Respectfully submitted,

H. Burton Stevenson, M.D.,
Rider P. O., Md. *Health Officer for Baltimore County.*

[Reports on file at the office of the State Board of Health show that between July 1st, 1898, and June 30th, 1899, there died in Baltimore County (including towns of Catonsville and Highlandtown)—Diphtheria, 31; infantile diarrhœa, 34; pneumonia 69; tuberculosis, 85; typhoid fever, 27.—M. L. R.]

CALVERT COUNTY.

In the past year we have had six deaths from typhoid fever and twenty-three from consumption.

There were three cases of diphtheria and two of scarlet fever, but no death from either disease. None of the other contagious diseases have occurred. In no case did typhoid fever spread in a neighborhood beyond a single family. Diphtheria and scarlet fever each was confined to a single patient in the families affected.

The physicians in the county, without exception, use great care in isolating patients affected by any of the contagious diseases, and the friends of the sick willingly follow instructions given upon this subject.

The value of the work being done by the State and County Boards of Health and by the Public Health Association, in directing attention to sanitation and to isolation in cases of contagious diseases, may, I think, be seen here. In 1896, previous to the organization of our local Board and of the Public Health Association, in one neighborhood to which a case of typhoid fever was brought there were many cases following and thirty-one deaths resulted. This was in a thinly settled territory, four miles square. The disease has entered several different neighborhoods this year, but has not spread in any of them. Results have been as favorable with other contagious diseases.

It is unpleasant to have to report so many deaths from consumption. I think we may hope to lessen the mortality from this most fatal disease by disseminating information concerning it being spead through the sputa of affected persons, and concerning the importance of properly heating and ventilating homes, school rooms and places for public meetings, and by securing such physical training in the public schools as will give the best possible development of the lungs, the organs usually first invaded by the disease.

Our Board of Health has adopted all measures suggested, aiming to secure sanitary improvement.

The mortality rate for the year has been 11 to 1,000 of population.

Respectfully,

T. M. Chaney, M.D.,

Dunkirk, Md. *Health Officer for Calvert County.*

[Reports on file at the office of the State Board of Health show that between July 1st, 1898, and June 30th, 1899, there died in Calvert County—diphtheria, 7; infantile diarrhœa, 7; pneumonia, 14; tuberculosis, 15; typhoid fever, 14.—M. L. R.]

CAROLINE COUNTY.

Dr. John S. Fulton, *Secretary State Board of Health.*

Sir: The soil of Caroline County being well adapted to the growth of fruits and vegetables has caused it to become a great canning center, some sections of the county having as many as ten canneries within a radius of three miles.

The local health department has observed the growth of this industry very closely and notes the fact that typhoid fever and kindred diseases have been more prevalent in these localities, and in order to counteract it (if perchance it might be traced to this cause) passed an order that all canneries in the county should be cleaned up daily and limed. Where it has been strictly observed a marked improvement in the general health is the result.

There is a general awakening to the importance of this matter, and a number of complaints have been lodged from all parts of the county. Gentle reminders have been met with a willing compliance with the order.

Typhoid fever has been of a malignant type in some cases and some deaths have occurred but not above the average number in the aggregate. The cold winter of '98 and '99 did not entirely check its progress. Now there are but few cases and the general health is excellent.

Diphtheria broke out in the public schools of Ridgeley, but by a prompt closing of schools and an earnest co-operation of the Secretary of the State Board of Health and the local physicians no general epidemic occurred.

On opening schools cultures were taken from the throats of eighty-nine children, all in attendance, and four developed evidences of infection. Withdrawing these from school for treatment the chasm was bridged and no further trouble. These with three other cases in the upper and lower part of the county are all that have been reported. Only a few cases of scarlet fever have occurred and those of a mild type.

J. L. NOBLE, M.D.,

Preston, Md. *Health Officer for Caroline County.*

[Reports on file at the office of the State Board of Health show that between July 1st, 1898, and June 30th, 1899, there died in Caroline County—diphtheria, 7; infantile diarrhœa, 1; pneumonia, 7; tuberculosis, 12; typhoid fever, 14.—M. L. R.]

CARROLL COUNTY.

DR. JOHN S. FULTON, *Sec'y State Board of Health.*

DEAR SIR: I am very sorry that I cannot give you a complete and correct account of matters relating to the Health Board, but I will report them to you as they have been given to me.

Number of children vaccinated in the county is 7,761; births from April 1st to October 18th, 336; deaths from April 1st to October 18th, 218; no case of typhoid reported in this district or in any other as far as I know; four hundred cases measles, seven deaths; ten cases scarlet fever, and no deaths; ten cases of whooping cough; forty cases of diphtheria, ten deaths.

I am in favor of passing a law requiring all doctors to give a burial permit throughout the State.

I am also in favor of a law regulating the salaries of the Health Physician, as it is one receives $25 a year, which does not cover postage and envelopes, and others get $400.

I also am in favor of all births being required reported under penalty of the law.

I also think all health officers should be paid at least twenty-five cents for recording births and deaths, which would create a fund for postage and envelopes, as quite a number neglect to report, as it is a loss of stamp and envelope every time they have to make a report.

I hope in another year my salary will be increased to such an amount that I will be able to do my duty, and compel others to do theirs.

I have visited the jail and almshouse, and find the condition of both very much improved since your last visit here.

I would also suggest that as there are quite a number o imbecile men and women in the almshouse (that is no place for them) that they be placed in some institution suitable, as the accommodations are very small and the care not the proper kind.

Respectfully,

John Swope Matthias, M.D.
Westminster, Md. *Health Officer for Carroll County.*

[Reports on file at the office of the State Board of Health show that between July 1st, 1898, and June 30th, 1899, there died in Carroll County—Diphtheria, 10; infantile diarrhœa, 4; pneumonia, 14; tuberculosis, 25; typhoid fever, 7.—M. L. R.]

CECIL COUNTY.

Dr. John S. Fulton, *Secretary of the State Board of Health.*

Dear Sir: Regular monthly meetings are held to hear the report of the Secretary and to consider not only the diseases prevailing, but sanitary deficiences likely to cause disease. The aim is to prevent as well as to suppress.

Statistics from October 1, 1898, to October 1, 1899.

Deaths from acute infections—diphtheria, 2; membranous croup, 4; remittent fever, 1; whooping cough, 1; measles, 1; erysipelas, 1; grippe, 4; tetanus, 1; puerperal fever, 1; total, 16.

Acute infections of a diarrhœal nature—typhoid fever, 10; dysentery, 1; cholera infantum, 4; entero-colitis, 2; diarrhœa, 1; gastro-enteritis, 2; total, 20.

Brain and nervous system—apoplexy, 9; meningitis, 5; epilepsy, 1; convulsions, 4; paralysis, 3; congestion of brain, 3; myelitis, 1; cerebro-spinal congestion, 1; spinal meningitis, 1; brain softening, 2; abscess brain, 1; total, 31.

Tubercular diseases—consumption, 25; acute tuberculosis, 2; tubercular meningitis, 1; total, 28.

(1) acute infections, 36; (2) brain and nervous system, 31; (3) tubercular diseases, 28; (4) heart disease, 26; (5) pneumonia, 25; (6) accidents, 14; (7) malnutrition infants, 13; (8) cancer, 12; (9) Bright's disease, 11; (10) general debility, 9; (11) unknown, 6; (12) old age, 5; (13) diseases of liver, other than cancer, 5; (14) disease of stomach, other than cancer, 4; (15) peritonitis, 4; (16) bronchitis, 4; (17) anæmia, 3; (18) cystitis, 2; (19) intussusception of bowels, 2; (20) abortion, 1; (21) umbilical hemorrhage, 1; (22) gangrene, 1; (23) sunstroke, 1. Total, 243.

This does not claim to be a scientific classification. Typhoid fever is not always a diarrhœal disease. The diseases grouped as acute infections are nearly all recognized by the public as such, and of a preventable nature. It shows 14.8 per cent. of the sum total.

On the face of the returns, tuberculosis shows 11.1 per cent., or 1 in 9. It is almost a certainty that among the diseases of the brain and nervous system, malnutrition of infants, old age, unknown, and general debility, 64 in all, that 15 were due to tuberculosis. This 15 and 28 make 43, or 17.6 per cent., about 1 in 6, without eliminating 14 deaths due to the various accidents.

While this may be overdrawn, the latter percentage is much nearer the real situation than the first; even the first demands that some further means be taken to overcome this scourge, which, in spite of our salubrious climate, is so prevalent in Cecil County. Classing it as an infectious disease, which it is, the 28 due to this cause and the 36 acute infections, 64 in all, make 26 per cent. of preventable deaths. The Health Board has made use of every opportunity, including an address at the Teachers' Institute and the Farmers' Institute, of calling the attention of the public to the infectiousness of this disease and the means of prevention.

Record of Some Infectious Diseases.

OCTOBER, 1898, TO OCTOBER, 1899.

	October.	November.	December.	January.	February.	March.	April.	May.	June.	July.	August.	September.	Total.	Recovered.	Died.
Typhoid fever.........	13	10	6	...	2	2	9	3	1	4	4	10	64	54	10
Diphtheria	...	9	2	2	3	...	1	2	...	1	...	1	21	19	2
Membranous Croup.	...	...	2	2	3	...	...	...	...	...	...	...	7	3	4
Scarlet fever...........	...	...	7	...	2	2	...	4	...	...	1	...	16	16	...

Particular attention has been given the above-named infectious diseases, and few cases, indeed, have escaped record. Antitoxine was used in nearly all the cases of diphtheria which recovered; it was not used in the fatal cases. The cases of membranous croup were regarded as diphtheria, though they all occurred between December 20 and February 8 during the cold weather. Antitoxine was used in the cases which recovered and not in those which died. Antitoxine is furnished indigent patients.

Typhoid fever is always with us. The death rate, 15.6, is higher than it should be. A great majority of the cases could be traced to impure water supplies. While we have not statistics for two full years, having commenced July 1, 1898, it appears from a comparison of seasons that there are many new centres of infection for 1899, and that the disease is more prevalent in the towns than in 1898.

In April the Board, fearing an epidemic of this disease, respectfully invited the Presidents or other representatives of the Town Councils to meet with the Board in May for discussion and the adoption of timely preventive measures. But two responded to the invitation. The towns urgently need local health boards.

The Town Council of Elkton, in July, passed an ordinance requiring a periodical cleaning of privies, sinks, cesspools, etc., in place of the universal stereotyped post mortem ordinance, which directed a cleaning when they "become offensive to the neighborhood." This ordinance might well be copied by the other towns. It and the improved drainage account for the remarkable decrease of cholera infantum, dysentery and other diarrhœal diseases during the summer of 1899, and a decline in the death rate of the town from nearly nineteen to about fourteen per thousand.

The County Commissioners have turned the public vaccination business over to this board for regulation; bills are paid only for effective vaccinations to physicians who are up to date in their reports of births, deaths and infectious diseases.

The majority of the physicians report births and deaths promptly but much value is detracted from this good work by the derelicts who send in late and incomplete reports. The above statistical report of deaths is not full. We have endeavored to make it so by letter and personal solicitation, but it is impossible for one health officer in a county to get a full report without the cheerful co-operation of the physicians.

A burial permit should be required in all cases of interment. It should be issued upon the presentation of a proper certificate upon which the physician should write in the cause of death, after the other data are collected by the family or the undertaker.

Respectfully,

HOWARD BRATTON, M.D.,
Health Officer for Cecil County.

Elkton, Md.

[Reports on file at the office of the State Board of Health show that between July 1st, 1898, and June 30th, 1899, there died in Cecil County—diphtheria, 5; infantile diarrhœa, 29; pneumonia, 30; tuberculosis, 36; typhoid fever, 12.—M. L. R.]

CHARLES COUNTY.

At present Charles County is in a very healthy condition so far as I can learn. During August and part of September quite a number of cases of typhoid fever were reported by Dr. Cornish Spencer in the neighborhood of Bel Alton, on the Baltimore and Potomac Railroad. No deaths were reported to me from the above-named disease. It seems that an old well which had been in use for quite a long time without being cleaned was the cause of a number of the cases. I ordered this well closed for a certain period, and no more cases were reported except two from Bowie, Md.

We have had quite a number of malarial cases, but very mild in character.

Scarlet fever made its appearance in the neighborhood of Pomonkey about the last of September, few were effected and no deaths; cases very mild.

It seems to be quite a task to impress upon the minds of parents the importance of vaccination, and a great many are keeping their children from school because they cannot be admitted without producing a certificate of successful vaccination.

I have forwarded to you all the death and birth cards I have received from physicians in the county, and very few physicians pay any attention to this law, as no compensation is allowed them for the trouble and expense of same. I think a very wise plan would be to have an officer to whom persons should be compelled to apply before burying their dead. I know of persons having been buried in this county with highly contagious diseases, and the same was never reported to the health officer and no attention was paid to the matter whatever. People innocently went to the funeral without knowing the danger they were running in doing so.

Very respectfully submitted,

C. L. CECIL, M.,D.,

Wicomico, Md. *Health Officer for Charles County.*

[Reports on file at the office of the State Board of Health show that between July 1st, 1898, and June 30th, 1899, there died in Charles County—diphtheria, 4; pneumonia, 4; tuberculosis, 9; typhoid fever, 8.—M. L. R.]

DORCHESTER COUNTY.

DR. JOHN S. FULTON, *Secretary State Board of Health.*

DEAR SIR: It is impossible for me to make a full and intelligent report of the health and vital statistics of Dorchester County, owing to the fact that comparatively few physicians and midwives take any interest or trouble to report the same to me. Nevertheless, I know that there is a decided improvement since you have taken charge of the office of Secretary to the State Board of Health, and I hope you will be continued in the same.

It is my opinion that the reporting of births and deaths should be made compulsory and paid for by the State. If, as is justly claimed, vital statistics is of such great importance and value to the State, why not have a general State law, uniformly fixing the salaries of health officers in the counties, according to the size and population of the same, and paid for by the State? Now the health officers, who are expected to go from one part of the counties to the other, depend upon the various boards of County Commissioners, who, in many cases, know nothing and care less about health officers.

So far as I am informed, the health of the people of Dorchester County for the past two years has been exceptionally good. No epidemic of the dreaded contagious diseases have made their visit to our county. A few sporadic cases of diphtheria occurred on Taylor's Island and near Madison last winter and spring. Thanks to Dr. B. L. Smith for his prompt action, by which the disease was soon crushed out.

Quite a number of cases of typhoid fever occurred in the city of Cambridge during the summer and autumn; but Dr. John Mace, Health Officer there, will doubtless report to you. There have been several cases of typhoid fever in Vienna, while not a single case has developed in the towns of East New Market and Hurlock this year.

We are exempt from the slaughter-house nuisance in East New Market.

Vaccination has been more general this season than in the past. Nevertheless, the pupils of two schools in District No. 2 have not yet been vaccinated, owing to the ignorance and prejudice of teachers and parents, who have been informed by a prominent lawyer of Cambridge, so I understand, that the vaccine law applies only to cities.

It would be very convenient to have all the laws referring to health, vital statistics and vaccination codified and published in one volume, for the use of health officers and others.

Yours truly,

GEO. P. JONES, M.D.,

East New Market, Md. *Health Officer for Dorchester County.*

[Reports on file at the office of the State Board of Health show that between July 1st, 1898, and June 30th, 1899, there died in Dorchester County (including Cambridge)—Diphtheria, 6; infantile diarrhœa, 9; pneumonia, 2; tuberculosis, 11; typhoid fever, 16.—M. L. R.]

FREDERICK COUNTY.

DR. JOHN S. FULTON, *Sec'y State Board of Health.*

MY DEAR DOCTOR: Owing to the unsatisfactory registration of births and deaths in Frederick County, I regret exceedingly my inability to make out a statistical report that would prove of any practical value to your Honorable Board. Since a current account of deaths, with special references to causes, is a matter which all sanitarians are deeply interested, this is most unfortunate.

That you are entirely familar with the defects in the Registration Law as it now stands, and that you will call special attention to the same in your report I have not the slightest doubt, since your experience must have convinced you that without a burial-permit section added to the present law it will remain practically valueless. To be effective, said permit must be made a necessary preliminary to the disposal of the dead body. Such permits would naturally be made out at the time and place of death in the presence of the family, who could give any information desired. It would rapidly follow the event, its importance would be more fully recognized and its prompt return greatly facilitated—all of which are essential. It is simply the key to the situation in the rational solution of the whole question. Returns to be of any practical value must be prompt, full and accurate.

The proper disposal of dead bodies is of, and in itself, as a sanitary measure alone, of great importance. In my circular-letter to physicians I called attention to, and condemned the custom in vogue in some sections of the county, of taking corpses into the churches, without any discrimination as to cause of death, there to remain whilst the funeral sermon is being preached, then the casket is opened, and all the curious men, women and children are invited to view the remains. In this way all are brought into direct contact with, and caused to inhale, the poisonous emanations arising from the dead body. The church is infected with the germs of disease, and without disinfection is left to remain a source of danger for weeks or months to come.

Persons dying of contagious or infectious diseases should be promptly interred by authority of the State or Local Boards of Health in accord with some uniform rule least likely to give offense to the relatives and friends, and at the same time, best calculated to protect the living.

It is useless to counsel isolation if such nuisances are permitted to continue unabated.

One other cause of the failure in the registration is the lack of adequate compensation. The State is fully able to pay for all services faithfully performed by her citizens. You cannot expect efficient service without adequate compensation. There should be a uniform fee commensurate with the intelligence required, as well as the actual labor performed. The Register of Wills is amply provided for, as he should be, by the emoluments of the office. It is unreasonable to expect the Register of Births and Deaths to perform his duties gratuitously, and as I plainly stated in my report to the County Board, I seriously question the legality of the Act which would compel them to do so. I find the physicians of the county willing to co-operate and do their duty if fairly treated.

If the State and counties are too poor or niggardly to appropriate the means necessary to properly protect the lives of her citizens, the war had better be declared off, we had better raise the yellow flag and retire before the preventable diseases are invading our homes and firesides. This would be cowardly, it would be un-American. Since the war is on let it be a fight to the finish. The friends of sanitation have boldly stepped forth into the arena, they are there to stay.

The State Board has had measurable success as fully demonstrated in suppressing and warding off serious epidemics. Let the good work go on; let it be appreciated as it should be by all good citizens. Let the judiciary of the State express themselves. They should define the law as well as their position. Society is being outraged by nuisances persistently maintained. They are the natural guardians of society. The weak and defenseless appeal to them for protection. Let it be known that to persistently maintain a nuisance is a crime against humanity as well as decency and that such persons will be dealt with as criminals. Let it be known that the law is not to remain a dead letter upon the statute books, but that it is to be enforced, that offenders are to be punished. Let the attention be sounded from the bench, then we will sound the forward and move in solid phalanx against the common enemy.

One serious epidemic would cost the State more in treasure alone, besides other interests involved, than it would cost to effectually protect the State for a generation. Let us arouse the citizens of our State to the dangers and perils of the situation, lest some terrible epidemic invade our borders and we have ocular demonstration of our wanton cruelty. Let the efficiency of the State and local boards be perfected by liberal appropriations. Let all good citizens co-operate with us in our efforts to protect society. The vital question of life is involved in the issue. If the strong will not, the weak and defenseless cannot, defend society against preventable diseases.

Since my last report, bearing date of January 2d, 1899, with the exception of an epidemic of measles in the northern section of our county early in the year, no serious epidemic has been reported. Sporadic cases of scarlet fever from different sections of the county have been reported from time to time. Typhoid fever generally of mild type has prevailed, but not to the extent of former years.

Vaccinations, owing in a great measure to the repeated warnings of the State and Local Boards of Health, have received more attention than ever before in the history of the county, at least in the absence of an epidemic of small-pox. As a result of our precautionary measures not a single case of this dreaded disease has been reported.

The sanitary condition of the county is good as compared with other years. Many nuisances have been, and are still being reported. I am using my best efforts to have them abated.

Diphtheria of severe type is now prevailing in the vicinity of Lime Kiln Postoffice, Buckeystown District, several deaths having been reported. Isolation is being enforced, antitoxine is being employed both in the treatment and as an immunizing agent, and every effort is being made to stamp out the disease, which is chiefly confined to the colored population, who, as you know, are entirely ignorant of sanitary measures, and consequently are troublesome to manage. They are being treated very properly by the physicians in charge, who are getting the disease under control. I do not anticipate a spread of the disease beyond its present bounds nor its long continuance.

Since my last report I have recorded and sent to your office 190 certificates of births—of these 91 were white males, 74 white females; among these there were 6 white still births, all females. Colored births—living, 17; male, 8; female, 9; colored still births, 6; male, 1; female, 5. Deaths—whites, 128; males, 68; females, 60; deaths, colored, 23; males, 10; females, 13.

All of which is most respectfully submitted,

DAVID M. DEVILBISS, M.D.,
Woodville, Md. *Health Officer for Frederick County.*

[Reports on file at the office of the State Board of Health show that between July 1st, 1898, and June 30th, 1899, there died in Frederick County (including towns of Brunswick and Frederick) —diphtheria, 8; infantile diarrhœa, 17; pneumonia, 9; tuberculosis, 49; typhoid fever, 9.—M. L. R.]

GARRETT COUNTY.

JOHN S. FULTON, M.D., *Secretary State Board of Health.*

SIR: I will try to give you a short outline of the sanitary condition of Garrett County during the last year.

The latter part of last winter and early spring we had quite a good many cases of la grippe, followed in some cases by pneumonia. During the year we have had some diphtheria in different sections of the county, and a number of deaths have been reported. At this time there are none to my knowledge. Whooping cough is now reported in Deer Park and vicinity. The last two or three months typhoid fever has been reported in different localities through the county, most of it being in the village of Crellin, some four miles west of Oakland, fifteen or more cases having occurred in that place, but no deaths reported there up to this time. The village of Crellin is situated on low land and partly surrounded by the waters of the big Youghegnany River and Snowy Creek. The sources of water supply are springs and wells, which, during the late dry weather, have become very low and impure, and no doubt have furnished the cause of this sickness.

So far as vital statistics are concerned, I have sent to you, from time to time during the year, all that have been reported to me. I am aware that the reported births and deaths fall far short of the total in the county. The fact is, it seems impossible to interest the members of the medical profession of this county in this work. Some send in a report one month, then wait one, two or three months before sending another, thus making statistic reports a practical failure. Births are reported more promptly than deaths. The failure in reporting deaths can be attributed to nothing less than wilful neglect, to say the least of it. I believe a burial permit section in the registration law would have a good effect in securing death reports throughout the county and smaller towns.

A *fair compensation* ought to be allowed local registrars for work of recording the certificates. It is only a simple business question as to how much it should be.

Outside of cases above reported, the general health of the county has been good throughout the year. And I may say that at present our sanitary condition is very favorable.

Respectfully, etc.,

W. H. RAVENSCRAFT,

Oakland, Md. *County Health Officer of Garrett County.*

[Reports on file at the office of the State Board of Health show that between July 1st, 1898, and June 30th, 1899, there died in Garrett County—Diphtheria, 9; infantile diarrhœa, 2; pneumonia, 33; tuberculosis, 7; typhoid fever, 4.—M. L. R.]

HARFORD COUNTY.

DR. CHAS. A. HOLLINGSWORTH, Health Officer. No report.

[Reports on file at the office of the State Board of Health shows that between July 1st, 1898, and June 30th, 1899, there died in Harford County (including towns of Aberdeen and Havre de Grace)—diptheria, 8; infantile diarrhœa, 6; pneumonia, 8; tuberculosis, 31; typhoid fever, 13.—M. L. R.]

HOWARD COUNTY.

DR. JOHN S. FULTON, *Secretary State Board of Health.*

DEAR SIR: In compliance with your notice, I desire to send my report for the current year. There have been a good many cases of typhoid fever in the county, and it seems to be on the increase for the past two weeks. At Elkridge there are quite a number of cases reported by Dr. Eareckson at this time, but as more than half the doctors in the county fail to report their cases I cannot give the number.

There have been a good many cases of diphtheria in different sections of the county. Dr. Shipley reports a number of cases near Alpha. Dr. Linthicum has had a number of cases near Savage. I had five cases in a family in my practice. These were from a case brought from Catonsville, Baltimore county.

Quite a number of cases of scarlet fever have been reported in different parts of the county, but nowhere has it assumed an epidemic form.

I have succeeded in getting the School Board aroused in the interest of vaccination, and teachers have been notified that they will be held strictly accountable for any violation of the law.

In reference to the "vital statistics" law, it is impossible to get anything like a full return while the doctors do not pay attention to the law. In my opinion a sufficient time has been given them, and if the law is any good it ought to be enforced. The undertakers in the county are helping us very much, as I now think all of them are reporting every burial they have. I think it would only be necessary to make an example of a few to open the eyes of all to the necessity of obeying the law.

We need more legislation for the State Board of Health and more funds to carry out the laws they have, and laws to assist them in protecting the health of the public. I think a registry law requiring a burial permit from the health officer of the city or county, to be given upon receipt of a certificate from the doctor attending the case; the undertaker to give the blank to the family to be filled by the doctor, and then taken to the party designated by the health officer and a burial permit obtained, the undertaker inclosing them to the health officer. This would at least give full return of deaths.

Very respectfully,

THOMAS B. OWINGS, M.D.,

Ellicott City, Md, *Health Officer for Howard County.*

[Reports on file at the office of the State Board of Health show that between July 1st, 1898, and June 30th, 1899, there died in Howard County—Diphtheria, 5; infantile diarrhœa, 30; pneumonia, 33; tuberculosis, 26; typhoid fever, 5.—M. L. R.]

KENT COUNTY.

DR. JOHN S. FULTON, *Secretary State Board of Health.*

SIR: The law creating local boards of health requires an annual report of the Secretary (or executive officer). As the Board and its affairs in Kent County depend entirely upon the actions of the Secretary, and as no meetings for hygienic or sanitary purposes are ever held, the minutes of the proceedings are, of course, not essential or at all important. Matters requiring the advice or assistance of the Secretary have been promptly dealt with. Various nuisances, unhealthy conditions, bad odors, unsightly surroundings, unsanitary affairs in general, public and private, have at once had attention, and I am sure good has resulted therefrom.

Notwithstanding, however, the frequent publication of cards of advice, directions for the guidance and help of those so badly in need of assistance during the past year and in former years, I regret to state that a lively interest in such work has not been awakened. We do not despair, however, for as the needs of such things are more forcibly and urgently brought to public attention, the more certainly will good result. The ability to hide behind their own acts, and the almost certainty that no financial or punitive harm will come to them makes persons and corporations bold and negligent. A stronger, more active and much further-reaching law is needed; I trust we will get it.

About the usual number of complaints of various kinds have reached this office during the year. Some of them have been of real moment, others of such trivial nature that they have been allowed to lie quiescent, and nothing more was heard from them.

I have from time to time visited the various sections of the county, especially the towns and villages. Tolchester and Betterton, as summer resorts, have been under consideration. I have found as satisfactory a state of affairs as could be expected, with ample room for improvement. Betterton was the source of complaint lodged with the Secretary of the State Board of Health, Dr. Fulton, who turned it over to me. An inspection showed the abatement of the chief nuisance complained of, though the continuance of the habit of pouring their waste and sewage into a common ditch, or run in a depression between the great hills at that place, will surely in time, contaminate the water supply, a matter to be greatly regretted, as there are several admirable springs at that point that should be protected.

The hog-pen question is still to the front, not only in the rural sections and unincorporated villages, but in the incorporated towns as well. Nothing can be done in this line without the passage of laws, county and municipal, that puts them solely and strictly under supervision of the Health Officer.

The water supply of farms in Kent is a serious matter. I believe the water-bearing stratum of our county is more than good. The pollution is due to lack of care and a total disregard of the value of an abundant and pure supply of good drinking water. Too often the only well or pump on the farm is at the barn yard fence, and examinations have time and again shown that the family was drinking diluted fecal matters from the cattle, and an abundance of well watered animal urine. In former reports this matter has been referred to, and at the meetings of the Maryland Public Health Association has been well ventilated.

I had the pleasure of attending the late meeting of the above association in November last as the representative of our Board. I am sure the good work it is doing will have a decided impress on matters sanitary, and hope the people of Kent will help the cause along.

The establishment of a bureau of vital statistics, with branches in the counties, has not during the past year resulted as I hoped. The first year the doctors of the county made their birth and death reports with creditable promptness, for the past six months great negligence has been the rule. I have sent written requests at frequent intervals urging them to make returns, with only a moderate degree of success. The value of vital statistics is unquestioned. That they should be full and complete is necessary—to get them so requires more stringent laws.

A committee (I am a member) was appointed at the last meeting of the Maryland Public Health Association to urge the passage of a law by the Legislature at its next session, requiring the possession of a burial permit issued by the Secretary of the local Board of Health before a deceased person can be buried, and making it unlawful to fail to comply. This would compel the doctors to at once report the death to the Secretary, also would make the undertaker unable to carry out his work without such a certificate. Such a law would entail a greater amount of clerical work on your Secretary, but would surely accomplish i s purpose. This is no new thing, as all the cities have such a law.

During the year we have had the usual number of cases of illness from various causes. Catarrhal diseases during the severe weather of last winter and on into the spring months were reported. At a number of places contagious diseases have made their appearance. Scarlet fever, German measles, and a few cases of diphtheria have been reported. Typhoid fever from midsummer until now have been of too frequent occurrence and furnishes a sad commentary on our lack of hygienic knowledge and sanitary practice. Chestertown and the sections around Still Pond have been the favorite locations for the most dreadful and at the same time most preventable of diseases. The water supply of Chestertown has been thought to be responsible. An examination certainly showed it to be unfit (for weeks) for drinking purposes. I am glad to say every possible effort has been made on the part of the owners, with my co-operation, to place it where it should be at all times.

Several schools have been closed during the year because of the presence of scarlet fever and diphtheria among the scholars, the school authorities acting promptly when I have asked them.

I append below a list of all cases of contagious and infectious diseases reported to me. I am quite sure it is incomplete and will be so until some plan is adopted to make it absolutely obligatory on the part of the doctor and head of families to make prompt returns. I am unable to give the number of deaths from the various diseases, as the reports are so incomplete. Death reports have always been fuller because of the undertakers' reports which frequently duplicate those of the attending physician.

Typhoid fever, 40; scarlet fever, 16; measles, 0; whooping cough, 0; diphtheria, 3; German measles, 5.

Births reported from January 1st to November 30th, 1899, 178.

Deaths reported from January 1st to November 30th, 1899, 175.

Yours very truly,

W. Frank Hines, M.D.,

Chestertown, Md. *Health Officer for Kent County.*

[Reports on file at the office of the State Board of Health show that between July 1st, 1898, and June 30th, 1899, there died in Kent County—diphtheria, 3; infantile diarrhœa, 15; pneumonia, 12; tuberculosis, 24; typhoid fever, 9.—M. L. R.]

MONTGOMERY COUNTY.

Dr. John S. Fulton, *Secretary State Board of Health.*

Sir: The health of our county has been remarkably good. A few cases of typhoid fever, measles and diphtheria, much less than formerly, mild and easily controlled. I have not seen a case of typhoid fever this season.

Early in August I was asked by Dr. Anderson to visit a colored family below Rockville. I discovered one case of scarlet fever and three others had the same disease. They were isolated; no spread, no fatalities.

The first week in September I visited a family in Denrod and found a case of scarlet fever, and told the family to remain at home. In a few days I had a message from the teacher of the school that children were coming from the infected house. I went there that day and told the teacher not to admit any child from this house or any other house if there was any extension of the disease. It appeared in two other families. They were isolated, and all recovered.

The reports of contagious and infectious diseases are far below what they should be.

"The function of vital statistics, which is of the highest use to the sanitarian, is to furnish true, full and fresh information concerning the causes of death. As to the cause of death, only a physician can testify with authority, and he will speak most authoritatively if his record be made at the time and place of death.

There is but one way to insure immediate registration, and that is to forbid any disposition of a dead body until a proper record is returned. The burial permit is the key to prompt registration, and without it no vital statistics law can be economically operated. I sincerely hope that the next Legislature will make such provision in an amended law.

Another important detail is the fair compensation of local registrars for the work of recording the certificates. I think a fee of fifteen cents for each complete record made is little enough remuneration.

Respectfully submitted,

E. E. Stonestreet, M.D.,

Rockville, Md. *Health Officer for Montgomery County.*

[Reports on file at the office of the State Board of Health show that between July 1st, 1898, and June 30th, 1899, there died in Montgomery County (including town of Kensington)—Diphtheria, 11; infantile diarrhœa, 7; pneumonia, 10; tuberculosis, 13; typhoid fever, 10.—M. L. R.]

PRINCE GEORGE'S COUNTY.

John S. Fulton, M.D., *Sec'y State Board of Health of Maryland.*

My Dear Doctor: Since assuming the duties of the County Health Officer of Prince George's County last May, very little has transpired to attract special attention. In several localities of the county we have had some cases of scarlet fever and diphtheria, but by the prompt and skillful treatment of the physicians in these several localities the disease was soon under control, and the number of deaths not very great. The local Health Board has at all times given liberal aid whenever requested, and heartily co-operated with the physicians of the county to prevent a spread of any contagious disease.

I have found considerable difficulty in getting the physicians of the county to report the births and deaths in their practice, although I have supplied them whenever requested with the necessary blanks. There is no compensation attached to this duty, and some seem unwilling to do it, unless paid. It is questionable to my mind whether we can ever get a satisfactory report of these cases, unless there is some better provision than now exists. I know of several physicians of the county who have not reported a birth nor a death since I took charge of the office.

I think an additional compensation should be allowed the local Health Officers of the counties, and require them to keep an accurate account with the physicians of their territory, and pay them a small compensation, say fifteen cents, for each birth and each death reported. I am led to this suggestion by the fact that I have received from three of our physicians letters asking me what compensation would be allowed them for this work. Many of our physicians, however, are very prompt in their reports.

I suggest that you call a special meeting of the Health Officers of the counties of the State, to be held early in January, and some decided action be taken to obtain better legislation in this particular point.

Another matter which I desire to call attention to is the law which requires all children to be vaccinated before attending the public schools. This law is not properly carried out, and several times since last May my attention has been called to bills for vaccinating sent to the local Health Board by some of the physicians of the county. The local Health Board of this county has, however, adopted means by which this trouble will be obviated hereafter.

I am, very truly yours,

L. A. Griffith, M.D.,

Upper Marlboro', Md. *Health Officer Prince George's County.*

[Reports on file at the office of the State Board of Health show that between July 1st, 1898, and June 30th, 1899, there died in Prince George's County—Diphtheria, 17; infantile diarrhœa, 9; pneumonia, 17; tuberculosis, 29; typhoid fever, 21.—M. L. R.]

QUEEN ANNE'S COUNTY.

DR. JOHN S. FULTON, *Secretary State Board of Health.*

SIR: I have the honor to submit herewith the second annual report of my stewardship as Health Officer for Queen Anne's County.

In presenting this paper for your consideration, it is my object to briefly set forth only the actual conditions as found in my administration of the office during the current year, together with such suggestions as may seem to me relevant and important.

If we accept the following statements as embodying the whole truth regarding the health and general sanitary conditions of my county, I am sure we must make a most satisfactory showing and compare quite favorably with any other section of the State.

The reports received from the physicians of the county, as far as heard from, supplemented by personal observation and diligent investigation, compel me to make favorable indeed complimentary comment upon our present health conditions.

The outlook certainly is most flattering and encouraging. Year by year there is an unmistakable and steady decline in our old time enemy, malaria, until now it may be safely classed among the incidental or accidental complaints of this region.

Since my last report (January 1st, 1899) there have been seen by, and reported to me, but 9 cases of typhoid fever, 5 cases of scarlet fever, 1 case of diphtheria and 1 case of chicken-pox.

Not a single case of continued malarial fever and very few cases of "chills and fever."

Cases of tuberculosis have not been reported, though I have knowledge of several. This class of diseases seems to have been ignored by the physicians in their reports except when embodied in a death certificate, after having thus ceased any longer to be a centre of infection.

During the past year the county has been visited by no epidemic form of disease at any point. Contagious and infectious diseases of a mild and sporadic character have appeared from time to time in different sections of the county; but, under the prompt and intelligent management of our local physicians, they have been speedily and effectually controlled.

While a majority of the physicians of the county have manifested a willingness to comply with the vital statistics law, I still have abundant reason to regret, and even to complain, of an incompleteness along this line that must render our statistics unreliable, if not actually misleading: yet I am gratified to note some improvement touching this important matter within the past year.

Going back to the beginning of my incumbency (May, 1898). I find that I have reported to you one hundred and eighty-two (182) deaths and two hundred and ten (210) births.

I append the following table showing the number of deaths between given ages, viz:

Within the first year	34
Between 1 and 5 years	13
" 5 " 20 "	17
" 20 " 40 "	37
" 40 " 60 "	29
" 60 " 70 "	30
" 70 " 80 "	18
Beyond 80 years	4
Total	182

I am glad to be able to report the very satisfactory sanitary condition of our Almshouse and Jail. Frequent visits of inspection show intelligence and willingness regarding the management of these institutions that are creditable to those in charge.

During the incumbency of the present Sheriff—covering, as it does, a period of two years—there has not a case of primary sickness of any nature occurred within the Jail.

The Almshouse is a model of sanitary excellence, carefully managed by a Board of Trustees and attending physician (Dr. J. A. Holton), in every way fitted for such an important and responsible duty. The Board and the inmates are most fortunate in having in their Superintendent (Mr. Jester) a most competent and humane person.

I am still of the opinion that the Insane Department is a mistake. I become more convinced each year that almshouses under present management and control are not proper places for the insane.

The schools of my county are universally in a most favorable and satisfactory condition. The sanitary and hygienic management is carefully looked after by a most intelligent and painstaking corps of teachers, under the watchful eye of their popular and efficient superintendent, Mr. L. L. Beatty.

I am more than gratified to be able to report very satisfactory results concerning the present water supply of Centreville. As you are aware, there were sunk artesian wells here during the past winter and spring to supply for the needs of our citizens for all purposes an abundance of pure water.

We have succeeded in satisfying every wish along this line. At a depth of four hundred and fifty (450) feet we found an ample supply, yielding under the pump four hundred and fifty (450) gallons per minute of clear and absolutely unobjectionable water, as good for all purposes as can be found on this shore.

We did not get a surface overflow, but only a few feet below there is quite an abundant overflow, sufficient to keep filled, except under unusual demands, a capacious hermetically sealed reservoir, which is always filled and ready for any emergency, such as fires, etc., though the usual supply for the town is pumped directly from the well.

Unfortunately we have no sewerage system to supplement and augment the great blessing incident to this grand water supply, to this extent at least diminishing and destroying its beneficence. The town of Centreville is exceptionally well situated for drainage. Elevated about sixty or seventy feet above sea level, with a decided slope both ways to tidewater, it offers an ideal condition and position for successful sewerage.

In the work performed by me as local Secretary during the past year I have been encouraged and sustained with greater unanimity than was my earlier experience. However, there are not a few obstacles to a complete and untrammeled right-of-way along this line yet. It has been said, and no doubt correctly, that an enlightened public sentiment is sufficient to correct every wrong—sanitary as well as others. But how are we to bring about this enlightened sentiment—this greatly-to-be-desired result? By what means at our command can we so educate the public? I have asked the questions. I must let you answer them. I will say, however, that the general efficiency of the working powers of the State's Health Board are very seriously impaired by the unfortunate association therewith—too often—of politics, resulting quite frequently in failure to engage those best qualified for the duties, and more commonly still in the biennial changes of the local Health Officers, thus working to the disadvantage of all concerned, as well as to the desired results.

These appointments should be made upon merit, and by those best qualified to judge of their fitness. Why would it not be well for the Central or State Board to regulate these appointments? They (the State Board), being fully alive to the requirements demanded of them, and with an eye single to the accomplishment of best results, would certainly, let us hope, be actuated only by justice and right in filling the positions. How can the State Board hope to accomplish satisfactory or full results without the necessary support from the branches? Comprehending the importance of an intelligent and industrious corps of workers, it is necessary that they should be selected with such care, and after such an investigation into their fitness, as will insure, at least, an average that will guarantee the welfare and the credit of both the subject and your Board. This subject deserves the careful consideration of those in authority, whoever they may be. I am afraid, however, that this important and vital matter, touching, as it must, the very foundation of your whole work, affecting, more or less, the interests of the entire State, can not, or will not, be satisfactorily adjusted or regulated until the force of intelligent or unbiased opinion, supplemented by legislative enactments, clears the way for it, divorcing it forever from all political alliances.

Speaking of legislation and law reminds me of another matter that should be amended to make it measurably effective, that is the registration law of this State. It must be obvious to all that it is radically imperfect along some lines at least. In its present form it is largely inoperative in its results, if the chief object thereof is the collection of full, accurate and, therefore, reliable statistics.

The importance of an efficient and comprehensive law regulating this matter is too apparent to need comment here. Such being the case why could not one element at least of the defect be remedied at the coming session of the Legislature? What would better accomplish this than a section requiring burial permits? This would insure fuller and more prompt reports for this branch of the subject.

I am inclined to believe that there are a greater number of unreported births (in this county) than deaths. This, in large measure, is due to the ignorant midwives, so called, who attend a large number of such cases among the lower class of whites and negroes, a large percentage of which escape registration altogether.

One can understand why the busy practitioner does not take a livelier interest in this matter of reporting his work when it is remembered that his valuable time is thus expended entirely without compensation. If it is a hardship in the case of the individual practitioner to perform *this* slight work gratuitously, it is a much greater imposition to require and to expect the local registrars to do their part entirely without compensation, and actually at a personal cost and outlay, when the labor is so much greater.

This is another feature of the law that might very properly be corrected as well as the very inadequate compensation received by the local Health Officers throughout the State.

In my last report to the Board of County Commissioners, sitting as Board of Health, I submitted for their consideration the following important suggestion, viz: That there should be provided, at one or more points throughout the county, houses of detention where tramp cases of contagious diseases could be confined and treated apart from the ordinary places, at present under their control (Almshouse and Jail). As we are now situated there is provided no place for such an emergency, however serious and far reaching might be the consequences. I regret to report no action taken by our Board.

This would very properly come under the consideration of the State Board, as your jurisdiction includes the counties. As prevention is the first purpose of a Board of Health, it will be eminently proper for such precautionary measures to be secured in every county of the State.

JAS. BORDLEY, M.D.,

Centreville, Md. *Health Officer for Queen Anne's Co., Md.*

[Reports on file at the office of the State Board of Health show that between July 1st, 1898 and June 30th, 1899 there died in Queen Anne's County—Diphtheria, 6; infantile diarrhœa, 8; pneumonia, 12; tuberculosis, 27; typhoid fever, 10.—M. L. R.]

ST. MARY'S COUNTY.

Dr. JOHN S. FULTON, *Secretary State Board of Health.*

SIR: I regret that we cannot report a more satisfactory compliance with the vital statistics law.

During the year only 68 deaths were reported and only one-half of the total number of registered physicians in St. Mary's made any reports at all. I think it fair to conclude that we have about 30 or 40 per cent. of deaths on our register.

Every physician has been supplied with cards with plain instructions how to make out a certificate of death, yet but a small per cent. have been made properly. Physicians do not take the time to answer all the questions, and in one instance even neglecting the name of person whose death they intended to report.

Midwives, when once informed of their duties, have made a better effort than the physicians. Unfortunately the majority of our midwives are illiterate and we cannot instruct them how to make a birth certificate, and, as they ask different persons to fill out the card, it depends on the intelligence of the families who employ them whether they are made out correctly or not.

According to the returns at hand, we have had three deaths from diphtheria and only one from typhoid fever; consumption and pneumonia claiming nearly a third of the total number of deaths.

Vaccinations are neglected. We advised members of School Board to admit into public schools none but properly vaccinated pupils, but no action was taken by School Board. Only a small per cent. of school children are vaccinated.

We have no large towns or villages and are rarely called upon to investigate nuisances.

We have had no epidemics during the year. Some cases of scarlet fever reported (not officially), but no deaths from that cause.

Physicians here claim that our vital statistics law, if enforced, would work a hardship toward the profession. To illustrate: If a physician was attending a patient ten miles from his office and had no other patients in that direction, he is compelled, under the law, to ride ten miles to make out the death certificate if the patient dies. He cannot claim compensation from the family for this ride, and the State pays him nothing for it; yet he is under a penalty to do work for which he receives no compensation.

The undertaker should not be allowed to bury any body unless he has a death certificate properly made out by the attending physician, and that would compel some member of the family to go to the physician's office and get the certificate before burial would be possible.

L. B. Johnson, M.D.

Morganza. *Health Officer for St. Mary's County.*

[Reports on file at the office of the State Board of Health show that between July Ist, 1898, and June 30th, 1899, there died in St. Mary's County—Diphtheria, 9; infantile diarrhœa, 1; pneumonia, 12; tuberculosis, 12; typhoid fever, 7.—M. L. R.]

SOMERSET COUNTY.

No Local Board of Health. No report.

[Reports on file at the office of the State Board of Health show that between July 1st, 1898 and June 30th, 1899 there died in Somerset County (including Crisfield)—Diphtheria, 1; infantile diarrhœa, 1; pneumonia, 13; tuberculosis, 14; typhoid fever, 8.—M. L. R.]

TALBOT COUNTY.

Dr. T. A. Councell, Health Officer. No report.

(Reports on file at the office of the State Board of Health show that between July 1st, 1898 and June 30th, 1899 there died in Talbot County—Diphtheria, 2; infantile diarrhœa, 14; pneumonia, 9; tuberculosis, 27; typhoid fever, 6.—M. L. R.]

WASHINGTON COUNTY.

Dr. John S. Fulton, *Secretary of State Board of Health.*

My Dear Sir: My report of 1898 closed with reference to the presence of two cases of variola in Hagerstown, and it is very gratifying to state that the disease represented by these two cases (which by the way were in my own practice) did not extend beyond the house in which it was discovered. Isolation of cases, quarantine and disinfection, in which the family energetically and intelligently co-operated, checked further spread of this dreaded malady. Prompt action in quarantining Fulton

County, Pa., and general vaccination in and about Hancock doubtless prevented invasion of our State by the disease which during December, 1898, existed in the above-named locality.

Vaccination by the regularly appointed vaccine physicians, of which there are fifteen in this county, is as thorough and effective as could be desired under the present law. Their work is confined to the indigent and is done at the public expense. Our experience in this work reveals serious defects in vaccine legislation to which allusion was last year made. If the public money is to be thus used, to vaccinate the children of the indigent, in the expectation that thereby the community will be protected from small-pox, and at the same time there is no control over the children of those able to pay for vaccination, we are deluding ourselves into a false security from which we will some day have a terrible awakening.

It has become a subject of common observation among vaccine physicians that physicians give children certificates of vaccination at the time of the operation without subsequent inspection or knowledge of the genuineness of the vaccination. The child and parents, satisfied with the possession of a certificate of vaccination which admits to school, are indifferent to the worth or worthlessness of the so-called "vaccination." The doctor is the prime factor in this fraud upon the community, and his work, as circumstances suggest, should be subject to some supervision whereby the public could be secure in the protection which it seeks and which is its right to enjoy.

The general health of Washington County has not been subjected to any special disturbance during the present year. From January 1st to August 1st, 1899, there were 19 cases of diphtheria and 12 cases of scarlet fever in Hagerstown. From January 1st to November 1st, 1899, there were 31 cases of diphtheria and 15 cases of scarlet fever at various places in the county, outside of Hagerstown.

The plan of reporting cases to me by the attending physician and my immediate notification to the Superintendent of Public Schools, with his order to school teachers of exclusion from infected households, has greatly contributed to limiting the prevalence of these diseases. There was constant decline in the number of cases, so that from February 1st, 1899, to August 1st, 1899, there were but seven cases of diphtheria and six cases of scarlet fever in Hagerstown.

I am glad to report a much more general recognition of the value of placarding, quarantining and disinfecting as means to limit and suppress disease. The County Commissioners, acting under my suggestion, have purchased three formaldehyde generators, which have been placed in different sections of the county for use by physicians.

The operation of the vital statistics law in Washington County since September 1st, 1898, to November 1st, 1899, excluding deaths in Hagerstown since August 1st, 1899, shows 538 births and 292 deaths. In my opinion the State should either improve the law requiring the registration of births and deaths or abandon it. In Washington County the majority of physicians, often at great inconvenience and trouble to themselves, faithfully observed the law, making monthly reports of births and deaths. There are some whose reports are irregularly and incompletely made, and others pay no attention whatever to the law, having never made a report of birth or death.

The operation of the law thus reveals two classes, one yielding acquiescence to the request of the State for information which shall furnish an accurate birth and death rate, as well as establish the comparative prevalence of fatal diseases; the other ignoring the law and withholding information absolutely essential to the construction of vital statistics which shall truthfully represent conditions in Maryland, and as contemplated by the law. The failure of these delinquents nullifies the faithful work of others and renders the returns of little or no value.

During the past summer a "Sanitary Board" was organized in Hagerstown. It has been at work since August, and exercises jurisdiction in Hagerstown and the sanitary limits which extend half a mile beyond the corporate limits. You will note, therefore, that since August 1st, 1899, deaths and contagious diseases occurring in Hagerstown are not included in my report. The need of such an organization has been manifest, and as long since as May 6th, 1897, in a letter to the Mayor and Council, I urged the importance of its creation, and although, like many other good things, "it has been long in coming." I am assured the results of its work will be most valuable.

Very truly yours,

J. McP. Scott, M.D.,

Hagerstown, Md. *Health Officer for Washington County*

[Reports on file at the office of the State Board of Health show that between July 1st, 1898 and June 30, 1899 there died in Washington County—Diphtheria, 14; infantile diarrhœa, 10; pneumonia, 18; tuberculosis, 42; typhoid fever, 10.—M. L. R.]

WICOMICO COUNTY.

Dr. John S. Fulton, *Secretary StaBoard of Health.*

Dear Doctor: Please find below report of number of cases of each: 33 typhoid fever, 37 typho malarial, 10 diphtheria, 13 scarlet fever, 15 measles, 20 chicken-pox, 7 mumps.

Yours respectfully,

C. R. Truitt, M.D.,

Salisbury, Md. *Health Officer for Wicomico County.*

[Reports on file at the office of the State Board of Health show that between July 1, 1898, and June 30, 1899, there died in Wicomico county of diphtheria 0, infantile diarrhœa 3, pneumonia 9, tuberculosis 27, typhoid fever 4.—M. L. R.]

WORCESTER COUNTY.

DR. JOHN S. FULTON, *Secretary State Board of Health.*

SIR : This county still sustains the reputation of being one of the healthiest in the State. This year has been an exceptional one, there having been but little disease of any kind, according to reports from physicians in the different sections of the county.

We have had a few cases of small-pox at Pocomoke City, being confined exclusively to the colored population. The first cases were imported from Norfolk. In all there were ten cases, resulting in but one death. By a rigid system of quarantine and general vaccination it was soon stamped out.

We have had also a few cases of typho-malarial fever of a mild type, with very few if any deaths.

The returns of the certificates of deaths and births to the Health Officer of this county have been so neglected that they afford no reliable basis for the computation of its percentage of deaths and births. Consequently there is an urgent necessity for a burial permit section to the registration law. We hope for a favorable consideration of this matter at the ensuing Legislature.

Respectfully submitted,

C. P. JONES, M.D.,

Health Officer for Worcester County.

Snow Hill, Md.

[Reports on file at the office of theState Board of Health show that between July 1, 1898, and June 30, 1899, there died in Worcester County from diphtheria 3, infantile diarrhœa 4, pneumonia 0, tuberculosis 28, typhoid fever 4.—M. L. R.]

REPORTS OF TOWN HEALTH OFFICERS.

ABERDEEN—HARFORD COUNTY.

Semi-annual report from January 1st, 1899, to June 30th, 1899.

DR. JOHN S. FULTON, *Secretary State Board of Health.*

DEAR DOCTOR: Whooping cough and measles epidemic during spring months.

One case of former, complicated with pneumonia, fatal.

No fatal cases of measles.

Scarlet fever, one typical case, Mabel Arthur, aged 12 years, April 30, recovered.

Diphtheria one, previously reported.

Typhoid fever, none.

Tuberculosis, none.

Infectious pneumonia, none.

Reports of births and deaths inclosed.

Respectfully,

J. H. KENNEDY, M. D.,

Health Officer for Aberdeen, Md.

December 12, 1899.

DR. J. S. FULTON, *Secretary State Board of Health.*

DEAR DOCTOR: Nothing worth reporting. No contagious or infectious diseases since July, when I sent in my report for first half of the year. I have seen but three cases of typhoid fever, one fatal. I find it very difficult to obtain the data to make out reports of births and deaths.

Very truly,

J. H. KENNEDY, M.D.,

Health Officer for Aberdeen, Md.

ANNAPOLIS—ANNE ARUNDEL COUNTY.

DR. JOHN S. FULTON, *Secretary State Board of Health.*

DEAR DOCTOR: In presenting my annual report I would like to be able to give a complete record of vital statistics for the year. But there exists so much apathy or unwillingness on the part of some physicians as to render such a record very unsatisfactory. The greatest obstacle to the collection of vital statistics is that physicians think that they should be paid for such service. Certainly the local health officer ought to receive compensation, as it is oftentimes a considerable tax on his time and patience to record such statistics.

Perhaps the best way to obtain full and prompt reports of deaths—and the need of which I would particularly emphasize—would be the incorporation of a burial permit section in the Registration Law, thus compelling all undertakers or sextons to submit a certificate from the attending physician, coroner or other proper person, as the basis of a permit to bury such deceased person. I have endeavored to have our city council pass such an ordinance independently of a State law, and which is herewith appended:

AN ORDINANCE

To amend Article 21 of the City Code, title "Health of the City," by adding thereto an additional section, to follow Section 26, and to be designated as "Section 26 A."

SECTION 1. Be it ordained by the Mayor, Counsellor and Aldermen of the City of Annapolis, That a new section be and the same is hereby added to Article 21 of the City Gode, title "Health of the City," to follow Section 26, and to be designated "Section 26 A," and to read as follows:

26 A. No dead body shall be buried from the City of Annapolis until a permit shall have first been obtained from the Health Officer, who shall receive from the Treasurer, by order of the Mayor, as compensation for issuing each certificate, the sum of fifteen cents. And the Health Officer is hereby required to keep a correct record of all such permits and report the same monthly to the Mayor, Counsellor and Aldermen. All undertakers or other persons in charge of the burial of said dead bodies, who shall neglect or fail to comply for such permit, shall be fined five dollars and costs, and in default of payment be confined in jail for ten (10) days.

SEC. 2. And be it ordained, That this ordinance shall take effect from the date of its passage.

EDWIN A. SEIDEWITZ, *Mayor.*

PHIL. E. PORTER, *Clerk.*

Approved October 9th, 1899.

CONTAGIOUS DISEASES.

During the early part of the summer several cases of whooping cough developed in different sections of the city. In my opinion the widely spread epidemic was due to pupils in the public schools. No precautions having been taken by parents as to isolation, the prevalent idea seeming to be that this disease is comparatively trivial, and in but few cases, as far as I know, was any medical advice sought. The fatal termination, however, of a number of cases among infants should be a convincing, though sadly acquired knowledge, that whooping cough is by no means so trivial as to be ignored.

In the latter part of September four cases of diphtheria were reported, all recovered but one—an extremely malignant case; antitoxine was used with seeming benefit, but the child died from cardiac paralysis as a sequel to the disease. I saw two other suspicious cases in the same locality, but the peculiar bacillus did not develop, and both recovered.

During the course of this disease three cases of scarlet fever were reported, all being of a mild character. Thorough disinfection of premises by the formaldehyde regenerator was practised, and it is believed these dreaded diseases are stamped out, at least, in the infected places.

Considerable complaint was made during the summer against the quality of the water supplied to the city. It was so offensive to taste and smell as to render it unfit for drinking, cooking or bathing purposes. At the earnest solicitation of leading citizens the City Council adopted measures requiring the reservoirs and catch basins to be emptied and cleaned under the supervison of the Health Officer. The trouble was apparently due to organic matters being washed into the sources by prolonged rains. The trouble was soon remedied, and I have not heard of any cases of illness that could possibly be traced to the pollution.

From time to time many nuisances, principally foul water-closets, etc., were reported and abated. With energies ever on the alert, and with the hearty co-operation of a majority of our citizens, the sanitary condition of Annapolis is maintained at an excellent standard. It is renowned for the extraordinary longevity of its inhabitants, the death rate being about twelve per thousand, of which a large percentage was due to old age and accidents.

Very truly yours,

WM. S. WELCH, M.D.,

Health Officer for Annapolis, Md.

BRUNSWICK—FREDERICK COUNTY.

DR. JOHN S. FULTON,

Secretary and Executive Officer State Board of Health.

DEAR SIR: Herewith, as per your request, a resume of the operations of our Health Board since the date of our last report, January 1st, 1899. In our efforts toward sanitary reforms we are yet contending with ridicule and opposition, but, happily, these obstacles are diminishing in force, and we believe the continuation of a policy firm, yet prudent, will in the near future place the Health Board high in the estimation of all our people. Our accomplishments have fallen far short of our hopes and expectations. The consummation of some reforms seems at this time as far remote as ever.

We believe it safe to say that the Health Department has passed well through the experimental stage, and that it has taken its place as one of our permanent institutions.

Our physicians deserve great praise for their co-operation and the hearty manner in which they have complied with the requirements of the sanitary ordinance.

The system of reporting and recording deaths and infectious diseases is working to our complete satisfaction. The burial permit contributes largely to the completeness of the death returns; in fact, we might say it is the key to the whole matter. Our local ordinance forbids the burial or removal of a body without a permit, and the result is such that we would recommend its adoption throughout the State.

The registration of births and deaths being of considerable value to the State, and at the same time a matter of labor and time to the health officer, we believe it but proper that the State should make some compensation for this work.

The matter of keeping hogs in towns and villages we consider a proper and desirable subject for State legislation. In fact, this appears to be the only solution to this question in view of the indifference and helplessness of the local authorities.

The biological supplies furnished by the State for the purpose of obtainining correct diagnosis in certain cases of suspected infectious disease have been valuable to the physician, patient and town generally. Our physicians have used these supplies freely.

Our inspections have been regularly made, and the sanitary conditions of the town has considerably improved.

Four persons were prosecuted successfully in the police court for maintaining nuisances on their premises.

Infectious diseases for the period beginning January 1 and ending August 31, 1899—Diphtheria, 1; cerebro spinal meningitis, 1; mumps, 4; typhoid fever, 1. Total, 7, against fourteen cases of all kinds for the corresponding period in 1898.

Deaths for the period beginning January 1st and ending August 31st, 1899—Abcess of brain, 1; apoplexy, 1; cancer, 2; cholera infantum, 1; child birth, 1; diarrhœa, 1; dropsy, 3; erysipelas, 1; heart failure, 1; meningitis, 1; neuralgia of heart, 1; old age, 1; pneumonia, 5; paralysis of pneumogastric nerve, 1; renal calculus, 1; cyanosis, 2; septicæmia, 1; railroad accident, 1; tuberculosis, 5; valvular deficiency, 1. Total, 32, against 26 for the corresponding period of 1898.

Yours, very respectfully,

H. S. Hedges, M.D.,
E. L. Harrison,
J. T. Martin,

Brunswick, Md. *Local Board of Health of Brunswick, Md.*

CAMBRIDGE—Dorchester County.

Dr. John Mace, Health Officer. No report.

CATONSVILLE—Baltimore County.

Dr. John S. Fulton, *Secretary State Board of Health.*

Dear Sir: I herewith transmit my report for Catonsville and First District of Baltimore County for year ending October 1st, 1899.

The statistical section of my report is nearly accurate, but, for various causes over which I had no control, not so accurate as I would wish. This community is so closely adjacent to Baltimore City, and the majority of those dying being buried in cemeteries within the limits of the city and requiring a permit, the attending physician's card reaches the State Board without passing through this office. Many of these certificates have been returned to me and recorded, but I am not sure that all have been.

To obtain a complete record, no body should be removed from the location where death took place without a permit from the local health officer, or registrar, and I sincerely hope that such a provision will be added to the present vital statistics law. If such a law is enacted at our next Legislature it will be of great benefit both in accurate collection and recording of death certificates and the reporting of contagious diseases.

Often the first knowledge the health officer has of the existence of diphtheria, etc., is from the certificate of death sent in, and it is often too late to prevent spreading of such contagious diseases.

Furthermore, if such a law were enacted the reports would be more prompt, as physicians frequently unintentionally forget a death that has taken place two or three weeks prior to time when he is required to send in his return. If a permit were necessary, the immediate filling out of the blank would ensure accurate record of cause, time and place of death.

There is no question of the value of a correct record of vital statistics, and to obtain same involves a great deal of work on the part of registrars, for which they receive no additional pay, having in this county to pay postage in sending returns to the State Board. I think that such work should be paid for. The registrar should receive a fixed fee for recording each card and an allowance for postage. Besides this duty, the registrars are compelled to forward a list of all males over 21 years to the Supervisors of Elections who have died in preceding months, for which service they receive no remuneration.

For the twelve months beginning October 1st, 1898, and ending October 1st, 1898, the following cases of infectious and contagious diseases have been reported to my office:

DISEASES.	October.	November.	December.	January.	February.	March.	April.	May.	June.	July.	August.	September.	Total.
Typhoid fever	1	...	3	2	1	...	...	7	2	2	6	...	24
Pertussis	11	...	...	...	...	...	...	4	2	5	...	...	22
Scarlet fever	...	12	1	...	...	...	5	1	...	...	...	...	19
Measles	...	1	4	1	...	...	...	1	...	...	...	...	7
Chicken-pox	...	...	13	...	...	...	...	...	...	...	...	...	13
Diphtheria	...	...	...	...	...	...	2	...	1	...	...	1	4

By the foregoing table you can see we have had with us typhoid fever every month, except March, April and September. Six of these cases during the month of May were in one family. The State Board of Health investigated these cases, and suspected water used for drinking purposes as the cause. The polluted section of source of our public water supply being stopped, we had no other cases from this source until August. The cases in June and July were attributed to well water contaminated by living well cess-pools. The main pumping station of the Catonsville Water Company having been burned in July, necessitated a temporary return to the polluted source, and hence we find an increase in typhoid fever in August. September does not show a single case, and I hope we may be free from it the balance of the year.

Whooping cough was quite epidemic during month of May, more so than report would show, as the majority of cases did not require medical attention, and hence were not reported. With these exceptions the health of my district has been very good.

I have abated quite a number of nuisances, namely, those of sewerage, and it is only a question of time when some system of sewerage for the town will have to be instituted, but until the town is incorporated no really serviceable system can be built. The continued use of living well cess-pools and the resulting contamination of private wells, notwithstanding repeated warnings, still remain the source of much sickness.

Vaccination in my district has been very thorough. I have used glycerinated lymph exclusively and with the best results.

Since my last report the new High School of Catonsville has been finished and occupied, the average attendance above normal, and with no sickness among the children.

The sanitary conditions of other small towns in my district has been very good.

Appended you will find a tabulated report of births and deaths.

Reports of births in Catonsville and First District of Baltimore County. Total number reported from October 1, 1898, to October 1, 1899, was 180. White (males 83, females 68,) 151; colored (males 14, females 15,) 29; total 180, of which there were stillborn 7 (white). There were 5 twin births reported.

Of these births, 101 were born at Catonsville; 5 were born at Franklintown; 7 were born at Grays; 20 were born at Dickeyville; 5 were born at Thistle; 24 were born at Oella; 4 were born at Mt. Gilboa; 1 was born at Uplands; 1 was born at Johnny Cake; 4 were born at Ellicott City (Baltimore County); 3 were born at Hollfield; 3 were born at Powhatan; 1 was born at Calverton (Baltimore County). Total, 180.

Record of Deaths from October 1, 1898, to October 1, 1899, in First District, Baltimore County, Md.

DISEASES.	October.	November.	December.	January.	February.	March.	April.	May.	June.	July.	August.	September.	Totals.
Angina Pectoris	1	...	...	...	...	...	...	...	...	...	...	...	1
Apoplexy	1	...	...	...	...	...	...	...	...	...	...	...	1
Acute Laryngitis	...	1	...	...	...	...	...	...	...	...	...	...	1
Acute Nephritis	...	1	1	1	...	...	...	...	...	...	...	...	3
Arterio Sclerosis	...	...	...	...	...	...	...	...	1	...	1	...	2
Burns	...	...	...	...	...	...	...	...	1	...	...	...	1
Chronic Progressive Paralysis	1	...	...	...	...	...	...	...	...	...	...	...	1
Croup	...	...	...	...	1	...	...	...	...	...	...	...	1
Chronic Nephritis	...	...	...	...	2	...	...	...	1	...	...	1	4
Cyanosis Neonatorum	...	...	...	...	...	...	1	...	...	...	...	...	1
Cholera Infantum	...	...	...	...	...	...	...	...	1	6	...	...	7
Cirrhosis	...	...	...	..	...	...	...	...	...	...	1	...	1
Cerebro-Spinal Meningitis	...	...	...	...	...	...	...	1	...	...	...	...	1
Dropsy of Brain	...	...	...	...	...	...	...	...	...	1	...	...	1
Dropsy	...	...	...	...	...	...	...	1	...	...	...	...	1
Dysentery	...	...	...	...	...	...	...	...	...	...	1	...	1
Diabetes	...	...	...	...	...	1	...	...	...	...	...	...	1
Dementia	...	...	...	...	...	1	1	2	2	4	2	...	12
Diphtheria	...	...	...	...	...	...	1	1	...	...	...	...	2
Dementia, Senile	...	2	...	4	...	2	...	...	...	...	1	...	9
Epilepsy,	...	...	...	1	...	...	...	...	1	...	...	...	2
General Paresis	2	1	1	1	...	...	...	1	1	...	...	...	7
Gastro-Enteritis,	...	1	...	...	...	...	...	...	...	...	...	...	1
Intussusception	...	...	...	...	...	...	...	...	...	...	...	1	1
Imbecility	...	...	...	...	...	...	...	...	...	1	...	...	1
La Grippe	...	...	...	5	1	...	...	...	...	...	...	...	6
Locomotor Ataxia	...	...	1	...	...	...	...	...	...	...	...	...	1
Marasmas	1	...	...	2	...	...	...	...	...	2	...	1	6
Mania	...	...	...	...	...	...	...	...	1	1	...	...	2
Melancholia	...	...	...	...	...	...	2	...	...	...	...	...	2
Paralysis of Heart	...	...	...	...	1	...	...	...	...	...	...	...	1
Paralysis	...	...	...	...	...	...	...	...	...	...	1	...	1
Premature Birth	2	...	1	1	...	...	...	1	...	...	1	...	6
Pulmonary Tuberculosis	1	...	...	1	1	...	1	...	2	1	1	1	9
Paranoia	...	1	...	...	...	...	...	...	...	...	...	...	1
Pneumonia	...	...	2	...	1	1	1	...	...	...	...	...	5
Pertussis	...	...	...	1	...	...	...	...	1	1	...	1	4
Rheumatism	...	...	...	...	...	...	...	...	...	...	1	...	1
Septicæmia	...	...	...	...	...	...	...	1	...	...	...	...	1
Still Born	...	...	...	...	...	...	...	1	1	...	...	...	2
Suffocation by Smoke	...	...	...	3	...	...	...	...	...	...	...	...	3
Suicide	...	...	1	...	...	...	...	...	...	...	...	...	1
Typhoid Fever	1	...	1	1	...	...	...	...	...	2	1	...	6
Traumatic Tetanus	...	...	1	...	...	...	...	...	...	...	...	...	1
Trichinosis	...	...	...	...	1	...	...	...	...	...	...	...	1
Valv. Disease of Heart	...	...	...	2	...	...	...	2	...	...	...	...	4
													128

Record of Deaths—Continued.

Ages of Decedents.	October.	November.	December.	January.	February.	March.	April.	May.	June.	July.	August.	September.	Total.
Died under 5 years of age	3	1	1	6	2	1	1	3	3	10	1	2	34
Died between 5 and 10 years	...	1	...	...	...	...	...	...	...	...	...	...	1
" " 10 and 15 "	...	...	...	1	...	...	...	...	...	...	1	...	2
" " 15 and 20 "	...	...	1	2	...	...	1	...	1	2	...	1	8
" " 20 and 25 "	1	...	...	1	1	...	...	1	1	1	2	...	8
" " 25 and 30 "	...	...	1	...	...	...	1	1	1	...	...	...	4
" " 30 and 35 "	1	1	1	...	...	...	...	1	...	...	1	...	5
" " 35 and 40 "	1	...	...	1	...	...	1	...	...	1	1	1	6
" " 40 and 45 "	1	1	1	...	1	...	2	2	...	1	...	1	10
" " 45 and 50 "	...	1	3	...	1	...	1	...	...	...	...	...	6
" " 50 and 55 "	1	2	...	...	...	...	...	...	2	1	...	...	6
" " 55 and 60 "	...	...	...	1	...	1	...	...	2	1	...	...	5
" " 60 and 65 "	...	...	...	2	...	2	...	...	2	1	...	...	7
" " 65 and 70 "	2	...	...	2	1	...	1	1	...	1	1	...	9
" " 70 and 75 "	...	...	1	2	1	1	...	...	...	1	...	...	6
" " 75 and 80 "	...	...	...	1	1	...	...	...	...	...	2	...	4
" " 80 and 85 "	...	...	...	3	...	1	...	...	2	...	...	...	6
" " 85 and 90 "	..	...	...	1	...	...	...	...	...	...	...	...	1
	10	7	9	23	8	6	8	9	14	20	9	5	128
Deaths, white males	3	4	4	9	2	2	5	5	1	12	4	...	
Deaths, white females	5	3	4	9	5	4	2	4	5	7	4	4	
Deaths, colored males	1	...	...	3	1	...	...	...	5	1	1	1	
Deaths, colored females	1	...	1	2	...	...	1	...	3	...	...	...	
Totals	10	7	9	23	8	6	8	9	14	20	9	5	128

Nativity—United States, 117; Ireland, 2; England, 2; Germany, 7. Total, 128.

Occupations.

Laborer, 11; farmer, 9; housewife, 16; merchant, 5; carpenter, 4; laundress, 1; dancing master, 1; shoemaker, 1; mechanic, 1; attendant, 1; blacksmith, 1; dentist, 1; cook, 1; cabinetmaker, 1; domestic, 1; preacher, 1; porter, 1; porter, 1; mill hand, 1; cooper, 1; tailor, 1; sailor, 1; painter, 1. Total, 128. No occupation, 66.

Place of Death.

Mt. Gilboa and vicinity, 3; Catonsville and vicinity, 53; Dickeyville and vicinity, 10; Maryland Hospital for the Insane, 38; Oella, 12; Gray's, 2; Granite, 1; Powhatan, 2; Arbutus, 1; St. Denis, 2; Avalon, 1; Ellicott City (Baltimore county), 2. Total, 128.

Yours very truly,

CHARLES L. MATTFELDT, M.D.,

Health Officer for Catonsville and Vicinity, Md.

CRISFIELD—SOMERSET COUNTY.

DR. JOHN S. FULTON, *Secretary State Board of Health..*

DEAR SIR: It will be impossible for me to send you any report for 1898 and 1899, as no one has given me any material to report. I have called the attention of the physicians in this town to the importance of reporting their obstetric and infectious cases, also births and deaths; but no attention has been paid to any requests.

Yours truly,

J. F. SOMERS, M.D.,
Health Officer for Crisfield, Md.

CUMBERLAND—ALLEGANY COUNTY.

DR. GEORGE L CARDER—Health Officer. No Report.

FREDERICK—FREDERICK COUNTY.

DR. JOHN S. FULTON, *Secretary State Board of Health.*

DEAR DOCTOR:—The Board of Health of this city as at present organized consists of C. C. Carty, President; W. H. Duvall, and Dr. C. F. Goodell, Secretary.

The record of Frederick City for the past year has been a good one. We have been visited with an epidemic of scarlet fever, covering a range of six months, but the type was mild and no deaths resulted therefrom.

The new law relating to the collection of statistics of births and deaths has been faithfully carried out, and I am satisfied that every death is properly reported and a proper burial permit issued therefor.

The collection of statistics of births is not quite so successful. Where there are a number of physicians in a community there is bound to be one or two who are careless in making returns. As this is a matter of great importance if accurate statistics are to be collected, I would suggest that the law be amended so as to compensate the physician and midwife for each return of birth, to the extent of twenty-five (25) cents (as is done in Massachusetts) and then make it an offense, punishable with a fine, not to make such return within the month. The proper collection of mortality statistics would necessitate the enactment of a law providing for the issuance of a burial permit for every death occurring within the State. An official could be designated to act in such capacity even in the most sparsely settled portions of our State, and that too without cost. If Maryland desires to take rank among the progressive States some action must be taken by the Legislature, such as the enactment of a general burial permit law.

Record of deaths from August 1, 1898 to July 31, 1899:

August	1898......	Deaths 14	Male 8	Female 6	White 8	Colored 6
September	“	“ 12	“ 5	“ 7	“ 11	“ 1
October	“	“ 19	“ 9	“ 10	“ 15	“ 4
November	“	“ 17	“ 7	“ 10	“ 15	“ 2
December	“	“ 9	“ 3	” 6	“ 6	“ 3
January	1899......	“ 11	“ 6	“ 5	“ 9	“ 2
February	“	“ 11	“ 6	“ 5	“ 8	“ 3
March	“	“ 18	“ 8	“ 10	“ 13	“ 5
April	“	“ 23	“ 11	“ 12	“ 17	“ 6
May	“	“ 18	“ 10	“ 8	“ 12	“ 6
June	“	“ 14	“ 10	“ 4	“ 9	“ 5
July	“	“ 15	“ 9	“ 6	“ 11	“ 4
		181	92	89	134	47

Resepctfully, C. F. GOODELL, M.D.,
Health Officer for Frederick City, Md.

FROSTBURG—ALLEGANY COUNTY.

DR. C. C. JACOBS—Health Officer. No report.

HAVRE DE GRACE—HARFORD COUNTY.

DR. JOHN S. FULTON, *Secretary State Board of Health.*

DEAR DOCTOR—The vital statistics of Havre de Grace for 1899 give the following figures:

No. of deaths, 40—male 17, female 23; No. of interments, 48; brought here for burial, 25; removed for burial, 17. Estimated population, 4,000. Death rate, 10 per 1,000. Only one birth was reported.

No. of deaths from diphtheria, 1; measles, 1; pertussis, 1; pulmonary tuberculosis, 3; pneumonia, 5. No. of cases reported—Measles, 8; scarlet fever, 3; mumps, 3; diphtheria, 3; pertussis, 2.

We have enjoyed remarkable immunity from typhoid fever; no cases reported and no deaths. Measles, mumps and whooping cough were the three diseases which assumed epidemic proportions. The table does not show it, but there is reason to believe that all cases were not reported, some not having any medical attendance.

Complaints made about offensive pig-pens and out-houses have been given attention and the cause removed.

The need of a burial-permit section in the Registration Law is very evident; also a section providing for the report of all births.

Deaths are being reported right faithfully, although often not promptly, but the report of only one birth would indicate that something is wrong somewhere.

This report is respectfully submitted.

H. S. WEUSTHOFF, M.D.,
Health Officer for Havre de Grace, Md.

HIGHLANDTOWN—BALTIMORE COUNTY.

DR. JOHN S. FULTON, *Secretary State Board of Health.*

DEAR DOCTOR—I herewith submit my report as Health Officer for Highlandtown, Canton and vicinity.

There has been less sickness and fewer deaths, according to the increased population, during the last year than in any previous year in the nineteen years of my practice in this locality.

We had no epidemic of any kind during the year. There were a few cases of sporadic diphtheria, which were promptly eradicated. Such nuisances that existed, which were in my power to do so, were promptly checked.

Since January 1, 1899, fifty-seven births were reported.

Seventeen deaths were reported: Pneumonia, 1; tuberculosis, 3; heart disease, 3; typhoid, 1; apoplexy, 1; marasmus, 3; Bright's disease, 1; diphtheria, 3.

One of the most important things to my mind is the need of a burial permit section in the registration law, and it is very essential that we get such a provision into the law at the next Legislature.

A very necessary detail is a fair compensation of the local registrars for recording certificates. A fee of twenty cents for each complete record made is little enough for the counties and small towns of Maryland.

Respectfully,

A. SHELMON WARNER, M.D.,

Health Officer for Highlandtown, Canton and Vicinity.

KENSINGTON—MONTGOMERY COUNTY.

DR. JOHN S. FULTON, *Secretary State Board of Health, Balto., Md.*:

DEAR SIR—I beg leave to submit the following report, for year ending November 30th, 1899. Number of deaths, 11; number of births, 15.

The sanitary conditions of this town are fair, but I hope before my next report we will have a water system which will much improve our present system.

During the past year we have had no cases of scarlet fever, small-pox, diphtheria or typhoid fever within the limit of our town.

Yours very truly,

WM. L. LEWIS, M.D.,

Health Officer for Kensington, Md.

LAUREL—PRINCE GEORGE'S COUNTY.

Health Officer unknown. No report.

LONACONING—ALLEGANY COUNTY.

DR. JOHN S. FULTON, *Secretary State Board of Health:*

I have the honor to present herewith the report of the Lonaconing Board of Health.

Whooping cough has prevailed in a mild way during the entire year. Influenza was epidemic in January and February. There have been nineteen cases of typhoid fever, fifteen cases of scarlet fever, six cases of diphtheria—all but one being laryngeal—and two cases of cerebro-spinal meningitis.

As heretofore the law in regard to vaccination has been enforced in regard to children of school age. The subject of vaccination has been called to the attention of the grand juries in this and Garrett counties, and the law has been observed in the country school districts better than in previous years.

All complaints of nuisances have been investigated and abated. A regular monthly report in writing has been made to the City Council, citing these several inspections and all other work done by the Board. At times these written reports have been supplemented by oral reports and suggestions.

Owing to the extreme dry weather, continued through September and October, the water supply of the Lonaconing Water Company became very low, and fair to bad in character. Eight cases of typhoid fever were traceable to its use. Samples of this water and samples of water from several springs and wells in the vicinity of Lonaconing were sent to the State Health Board for analysis. From the report upon these samples and from reports received in former years, much valuable knowledge has been gained. Since the general registration law went into effect seventeen months ago seventy-five deaths and three hundred and twenty-nine births have been recorded. All this has been done without compensation.

Our health ordinance provides that no human body shall be buried without a permit from the town clerk. This and other restrictions connected with the burial and removal of dead bodies has helped to teach the people to be more careful about needless exposure at funerals in case of death from contagious disease. The ordinance was well received, and has rendered valuable assistance to our undertakers and ministers in conducting funerals. A State law, with similar provisions, might well be enacted.

JAMES O. BULLOCK, M.D.,
Health Officer for Lonaconing, Md.

POCOMOKE CITY—WORCESTER COUNTY.

DR. JOHN S. FULTON, *Secretary State Board of Health:*

SIR—In reference to your inquiry concerning the small-pox plague in our city I beg leave to make the following report:

On Saturday, 18th of February, 1899, I was called to see Wood Wilson, colored, who lived on the suburbs of the town of Pocomoke City, Md. I found him broken out with small-pox in the discrete form. This was his home, and he had arrived here the Saturday previous from Norfolk, Va., where he had been at work with about thirty other negroes, all of whom were from this vicinity. I immediately notified the Mayor and City Council of the existence of small-pox in our town, whereupon they at once telegraphed for Dr. John S. Fulton, Secretary of the State Board of Health.

On the same afternoon I was notified that Henry Todd, colored, who had also been at Norfolk, Va., was sick at his home. He resided in the corporate limits of Pocomoke City. I investigated the case at once, and found him broken out with small-pox in the discrete form. This patient lived in the centre of the town.

Later in the same afternoon I was told that Lonie Merrill, a colored boy, was sick at the residence of his mother, within the corporate limits of our town. Investigation proved that he, too, was one of the Norfolk gang, and a visit to him revealed the fact that he was suffering with small-pox in the same form as the other two above mentioned. The Merrills lived on the opposite side of the town from the Wilson family.

Later I learned that the negroes from this section had been at work on the Belt Line Railroad around Norfolk, Va.; that they slept in an old car in which there were several cases of small-pox, and that the negroes above reported had run away, hoping thereby to escape the disease.

Dr. Fulton started for Pocomoke as soon as he received the telegram from the Mayor and Council, and he arrived here at 3 o'clock on Sunday morning. After his arrival, at as early an hour as possible, he visited the patients with me, and agreed fully with my diagnosis. At nine o'clock we had a special meeting of the Mayor and City Council called to discuss with us the best means to stamp out the disease. We decided to vaccinate at once all the inmates of the affected houses and those in the vicinity of the same. We advised every person in town who had not been vaccinated within one year to get vaccinated at once.

We selected a vacant house, about a half mile from the town limits and fully a quarter of a mile from any residence to be used as a pest house. With a little expenditure in the way of carpenter's work this house could have been made a first-class pest house. We intended to move the patients to it on Monday, but some malicious person or persons burned it Sunday night, so we had to build a new house to use in its stead. The following morning, being Monday, the Mayor had men at work on a shanty near the one burned the night previous, and before sunset it was finished. At an early hour that night the patients were moved into their new quarters. We selected another house just outside of the town to be used as a detention house, and we moved all the inmates of the infected houses there.

Dr. Fulton sent us Schering's Formaline Disinfectant, together with several cases of Pastils. I disinfected the houses and clothes of all the persons whom I suspected of being in the contagion. We selected James Wilson, the father of Wood Wilson, who had small-pox several years ago, as nurse.

On the second day of March, Rosa Merrill, sister of Lonie Merrill, was taken sick at the detention house. I discovered that she had varioloid. I moved her at once to the pest house.

On the 5th of March, Doricella Merrill was taken with the discrete form of small-pox at the detention house. She was immediately transferred to the pest house.

On the 8th of the same month I was informed that Mary Phillips, a colored girl, who lived about a quarter of a mile from the town limits was taken sick. I investigated her case at once and found that she was suffering with the confluent form of small-pox in the very worst form. The girl was about sixteen years old, was pregnant and unvaccinated. I had her moved at once to the pest house. She died on the 12th of March. I wrapped her in a blanket, placed her in a box, put quick lime over her and buried her near the pest house.

On the 13th, at the request of Dr. John S. Fulton, the County Commissioners, with Dr. C. P. Jones, County Health Officer, met with our local authorities to take further measures to stamp out this dread disease. At the suggestion of Dr. Fulton they decided to have a general vaccination of all those persons in Pocomoke City and the adjacent county for an area of two miles, who had not been vaccinated within two years. They appointed Dr. J. H. King and myself vaccine physicians. They also decided to build a new detention house near the one we were already using. We moved all the suspects in these houses and thoroughly disinfected their homes. From start to finish we had to keep a close watch over the negroes as they were disposed to conceal everything from us. We had guards placed over the detention houses to prevent any ingress or egress.

On the 14th I found Alice Matthews, who lived in a house with John Marshall and several other negroes, broken out with small-pox. I sent her to the pest house, and the rest of the inmates to the detention house, and disinfected their home at once.

On the 15th the one-year-old child of Alice Matthews and the four-year-old son of John Marshall were taken with varioloid at the detention house. They were forthwith moved to the pest house.

On the 16th, Mary Field, another inmate of the detention house, was taken with small-pox in the discrete form. Had her also sent to the pest house. This was the last case.

We had ten cases in all, one of which proved fatal. There were about sixty suspects in the detention house at different times during the epidemic. We kept the suspects in for twenty days. At the end of that time they were thoroughly disinfected and released. In one or more cases the disease broke out in houses where a dozen or more negroes resided and the outlook was really alarming. The patients who suffered from the disease, as soon as they had reached the proper stage of recovery, were thoroughly cleansed, the scales removed, given new clothing from head to foot and released.

The estimated cost incurred in fighting the epidemic was about $1,200, including everything incident thereto.

Yours very truly,

C. F. Hargis, M.D.,

Health Officer for Pocomoke City, Md.

REPORT OF THE BACTERIOLOGIST.

DR. JOHN S. FULTON, *Secretary of the State Board of Health.*

DEAR SIR: I hereby respectfully submit my report on the work performed in the Bacteriological Laboratory from January 1st to December 15th, 1899.

Examinations of blood for the typhoid reaction: Positive reactions, 75; negative reactions, 75; total, 150.

Examinations of sputum for tuberculosis: Tubercle bacilli present, 63; tubercle bacilli not present, 57; total, 120.

Examinations for suspected diphtheria: Positive cases, 79; negative cases, 169; total, 248.

Examinations of blood for suspected malaria: Positive cases, 2; negative cases, 26; total, 28.

Examinations of water, 129.

Examinations of vaccine virus, 29; examinations for rabies, 1; examinations of ice, 2; examinations of milk, 1; examinations of filters, 3.

In order to describe the results obtained, comments will be made separately upon each disease.

TYPHOID FEVER.

The method proposed by Westbrook has been used for examining the dried scales of blood sent by physicians to be tested for the typhoid reaction. This consists in adding 1 milligram of dried blood to 100 millograms of distilled water. The blood is allowed to thoroughly dissolve in the water for one hour, and one loopful of a 24-hour fluid bouillon culture is added to one loopful of the dissolved blood on a cover-slip. This is an apparent dilution of 1.200, but is in reality only 1.50, since dried blood loses three-quarters of its original weight as a fluid.

The bouillon is made exactly neutral to phenolphthalein. The cultures are allowed to develop at the ordinary room temperature. The blood is collected by the physicians in aluminum boxes and sent by mail. The doctors are carefully instructed to obtain large enough drops to weigh, as they easily scale off the metal after drying. Very often, however, they secure such small flat drops that the less accurate plan of making a dilution of 1.20 by the eye has to be adopted. I would respectfully suggest, in the next series of circulars, that this point be carefully emphasized.

TUBERCULOSIS.

Although a number of physicians have sent specimens to the laboratory, yet the number of cases examined for the tuburcle bacillus is very small when compared to the large number of cases of consumption which annually occur in Maryland.

Physicians are apt to confound early tuberculosis with other less serious conditions, and they often delay any real measure of relief, such as the open-air treatment, until the patient is beyond the reach of everything except the sickle of the grim reaper. Many a useful life could be saved if the physicians would send specimens from all early suspicious cases as a routine measure.

The consensus of medical opinion now upholds the sanatorial treatment as a very useful method, and a number of cures are reported by those who are familiar with its use. These cures can only be accomplished if the case is diagnosticated in its early stage, and the laboratory test usually settles this at once.

In case a negative report is received, the physician should send other specimens as long as his suspicions of tuberculosis remain. The report blanks contains the following directions covering this:

If we report that no tubercle bacilli were found, we may have failed to find them because they were exceedingly few, or because your patient did not cough up anything from a tuberculous area, or because your patient has not tuberculosis. Having found them once, the diagnosis is made; but if they are not found, you should not give up your own well-grounded suspicions until several examinations have failed to reveal the tubercle bacillus.

DIPHTHERIA.

It has already been pointed out that it would be unwise, especially in obvious cases of diphtheria, to defer the use of antitoxin until a positive report has been received from the laboratory. But the test for diphtheria has further uses. It is now known that virulent diphtheria bacilli, capable of producing the diseases in others, will often persist in the throat for several weeks after all other manifestations of the disease have disappeared and the patient has apparently recovered. Diphtheria is spread, and many children are infected by convalescent cases in which the diphtheria bacillus still exists unsuspected by physician and friends. A patient should never be permitted to mingle with the public until two successive negative cultures have demonstrated that the throat is free from diphtheria germs. It has also been shown that children who have been housed with diphtheria cases will at times give pure cultures of the diphtheria bacillus from their throats, without showing any symptoms of the disease.

A number of the doctors throughout the State have sent in cultures for diagnosis, and many of the cards contain the information that antitoxin has already been used. A number of cultures have also been examined from the throats of convalescents in order to determine whether the patient was again ready to mix with the public.

The attention of physicians should also be called to the fact that when we make a negative report for diphtheria, it does not necessarily mean that the bacillus of diphtheria is not present. This point is explained on the notice which we send to the physician, as follows:

Failure to find the diphtheria bacillus may mean:

A. That the culture was not properly made, Please carefully follow the instructions.

B. The growth on the medium was so scanty that it is probable that some antiseptic was used in the throat shortly before the specimen was taken.

C. The culture was badly contaminated. The swab must have touched something else besides the throat.

D. The infection may be in the larynx, and the swab may not have touched the membrane.

If there is any doubt about the case send us other specimens.

MALARIA.

The examination for the malarial organism has only resulted in two positive results out of twenty-eight specimens examined. Some of these cases may have been malaria, and the organism have been destroyed in the blood by the administration of quinine. Then, again, some of the specimens we receive are so badly spread that their examination is rendered impossible. Although it is wise to allow the physicians to use this method of diagnosis, yet it will take some time before most of them are able to properly spread a specimen for microscopic examination.

The directions are as follows:

If the glass squares are not quite clean dip them in alcohol and wipe with a soft, clean handkerchief. Handle very carefully so as not to touch the surface of the glass with your fingers. Clean the lobule of the ear with water and a towel and puncture with a small needle. Wipe off the first drop of blood that appears, then squeeze out rapidly a second small drop. Touch the drop of blood with the centre of one of the glass squares, turn the glass over and lay it on top of another glass square in such a manner that the blood will spread out in a thin layer between the two glasses. The moment the blood ceases spreading slide the glasses apart, lay them both down wet side upwards, and turn the tumbler over them. Fill out your information card and then put your dried slips in the box, return it with the card to the mailing case and forward to us.

It is always better to send several specimeds of malarial blood. Use all the slips if you like.

Epidemic Cerebro-spinal Meningitis.

The clinical picture of meningitis is, as a rule, easily recognized by physicians, but the epidemic form is not always easily distinguished from the other forms. Typhoid fever sometimes strongly simulates cerebro-spinal meningitis, and the severe diarrheal diseases of children often develop cerebro-spinal symptoms.

The positive diagnosis of epidemic cerebro-spinal meningitis rests upon the discovery in the spinal fluid of the *diplococcus intracellularis*. Puncture of the spinal canal for the withdrawal of this fluid is not, in competent hands, a dangerous procedure. Indeed it is said to be sometimes beneficial. We do not recommend the operation to those physicians who have not previously learned it from a good operator. The diagnosis by spinal puncture after death may, however, be very useful in the management of later cases. In persons over fifteen years old suspected to have cerebro-spinal meningitis, it is well to send, besides the spinal fluid, a specimen of dried blood for the typhoid test.

If it is desired to make a bacteriological diagnosis of epidemic cerebro-spinal meningitis write and ask us for special culture tubes.

Spinal puncture is made with a sterile hypodermic needle. The syringe can be sterilized by filling it with a 5 per cent. solution of carbolic acid, and allowing it to remain in the syringe for five minutes. Then wash out the carbolic acid with several syringefuls of water which has been recently boiled. The skin over the second and third lumbar vertebræ should be sterilized. with 5 per cent. carbolic solution, and then thoroughly washed with sterile water. The needle should be at least an inch in length. Make your puncture in the median line between the second and third spinous processes of the lumbar vertebræ. When your needle gives the sensation of being in a free cavity, draw the piston. If the fluid does not follow the piston, move your needle gently in and out, stopping as soon as the fluid appears. When the syringe is full, withdraw the needle, and squirt a portion of its contents over each of four or five culture tubes. Never remove the cotton plug from the culture tube until you are ready to introduce the fluid, and then replace it at once, without laying it down anywhere, and without handling it unnecessarily.

RABIES.

It has been demonstrated that rabies is rather prevalent in Maryland. Not only does it exist among dogs, but the work of Dr. Clement, the State Veterinarian, and of the State Board of Health has shown that dogs often infect by biting such animals as cats, cows, sheep and horses. A number of cases of rabies in human beings have also occurred in Maryland, and it is often important in order to save a human life that an examination be made of the suspected animals. The presence of the rabic virus in the brain and cord can usually be detected within two weeks, and as the disease does not develop in man for at least a month, this offers time for treatment. All animals showing symptoms of this disease, particularly if they have bitten persons, should be killed and their heads sent packed in ice to the laboratory. If the suspicion of rabies is pretty strong, it is not prudent to, postpone treatment until our laboratory results are made known, since we can never determine the matter within ten days, and may be as long as thirty days. The treatment of a bitten person must be begun at least sixteen or eighteen days before the attack of rabies may be expected.

What the Pasteur treatment may be expected to do is indicted in the following, for which we are indebted to Dr. N. G. Keirle, Director of the Pasteur Department, City Hospital, Baltimore:

I. Rabid bites of all grades on face and neck, without treatment would be fatal in about 30 per cent. of cases. Treated by Pasteur's method the fatal cases would be a little over 1 per cent.

II. Severe and multiple bites on face and neck, untreated, would be fatal in from 40 and 90 per cent. of cases. Treated under unfavorable circumstances, 6 per cent. of these cases would result fatally. Unfavorable circumstances are delay in beginning treatment, late or inefficient cauterization of the wounds, alcoholic intemperance, etc.

III. Severe and multiple bites on bare parts of the body and limbs are fatal in about 30 per cent. of instances, untreated.

Treated, the fatality would be less than 1 per cent.

IV. Bites through clothing give a mortality between 6 and 18 per cent., if not treated.

Treated, these bites prove fatal in not more than one-tenth of 1 per cent. of cases.

The services of the biologist to physicians are not meant to be a gratuity to physicians, but should, the State Board of Health believes, lead to mutually helpful relations between the health officials and private practitioners. The biological work is done under the direction of the State Board of Health, and may be stopped at any time in any case. It will be observed that each of the information cards sent out with the mailing cases for physicians' use begins with the question, "Are you up to date, etc." The obvious purpose of this inquiry is to impress upon physicians that some reasonable reciprocity is expected. The order of the State Board of Health on this subject to the biologist is as follows:

BIOLOGICAL LABORATORY ORDER NO. I.

When a request for biological examination is received from any one who omits to answer the first question on the card, "*Are you up to date with your reports of births, deaths and infectious diseases?*," or if this question is answered in the negative, the biologist shall at once address the sender of the specimen a communication informing him that the result of the examination may be withheld until the arrears of birth and death certificates are made up, or until a written answer is received stating that the question should have been answered in the affirmative. The biologist shall not, however, delay the examination in such a case, but shall make and report the same to the Secretary of the State Board of Health, who shall dispose of it according to his own discretion.

WM. H. WELCH, M.D., Pres. pro tem.
December 15, 1898. JOHN S. FULTON, M.D., Sec.

In obedience to this order, it is the practice in this laboratory, whenever a physician sending a specimen fails to answer this first question in the affirmative, to mail him a postal card advising him that his specimen may not be reported upon unless he at once makes up his arrears of returns of births, deaths and infectious diseases. The report in such a case will be inevitably delayed until the matter can be laid before the executive officer of the board. Whether the report will be entirely withheld or not depends upon the greater or less urgency of the investigation from the public health point of view. The personal and private interest of the physician making such a request will receive consideration precisely in proportion to the interest manifested by the doctor in the inquiries of the State Board of Health. Neglect of their reporting duties may therefore result not only in inconvenience, but in actual injury to physicians. For any harm that may result to any citizen from this ruling the State Board of Health is in no sense responsible, since every physician may, with very little trouble, keep himself qualified to call upon the State Board of Health for such services. It is certainly more important to conserve the larger interests of the State, which the laws upon vital statistics and infectious disease are meant to protect, than to serve the private interest of any physician who neglects his wider though less urgent duties.

THE BACTERIOLOGICAL EXAMINATION OF DRINKING WATER.

There are several points in the accompanying table which can be emphasized to advantage. In last year's report an investigation of a typhoid epidemic was made at Lord and Ocean, Allegany County. The Lord pipe line supplying water to a portion of this town was examined. Only seven colonies and no colon bacilli were found. An examination made this year shows that this supply contains 304 bacteria, but no colon bacilli, and since the water comes from a spring, it can still be considered as safe. The Ocean water derived from a run after it has passed through Lord, receiving the sewage thereof, has become even more dangerously polluted than last year. In November, 1898, the Ocean water contained 1866 bacteria, and the colon bacillus was found in fifty cases. In September, 1899, it was found to contain 7500 bacteria, and the colon bacillus was found in one cubic centimeter. The citizens of this town should be aroused to the importance of improving their water supply, as water-borne diseases cannot fail to occur among persons drinking such polluted water.

Another interesting investigation was made by the State Board concerning a series of typhoid cases, which occurred on the place of Mr. B.—— R.——, at Catonsville.

The following letters will explain the results of the investigation:

DR. JOHN S. FULTON, *Secretadr State Board of Health.*

DEAR SIR: I hereby respectfully report the results of the investigation made by me at the house of Mr. B—— R——, near Catonsville, on June 5, 1899.

Upon inquiry it was found that two of Mr. R's children, with the governess, had visited Washington about April 8, and had dined at the Shoreham Hotel. On May 8 one of the children developed typhoid fever, and about this time the governess began to feel ill, but did not become bed-ridden for a week or more. This was the beginning of a severe attack of typhoid fever. Ten days after the first case a second child developed the fever, and fifteen days after the first case a third child, who had not been to Washington, developed a typhoid attack.

The house stands on a high hill, and the plumbing showed no leak or apparent flaw. The sewage is taken from the house by a pipe which runs down the sloping lawn for 120 yards, and then bends sharply, and runs for 300 yards, where it ends in open points distributed over the orchard according to the plan of Waring. At the end of the first fifty yards beyond the bend the ground was boggy, and just at the right of this boggy path is the celery bed of a large vegetable garden. All the members of the family ate the celery washed in ordinary water until May last.

About fifty yards below the angle of the sewage pipe (see diagram) the dairy was found. The milk was collected in crocks and cooled in running water from the Catonsville supply, and ice from a pond which is formed from two streams. One of these streams was traced to the kitchen waste from the house of a colored woman living on the other side of the road from Mr. R's place. The privy here had a well-limed box, which is emptied regularly, and no connection between this and the stream was found.

The ice from the local pond was used, it was said, only to cool the milk, and the meats in the refrigerator. The Knickerbocker Ice Company supplied the ice which was put into the drinking water. The water for drinking was first boiled, and then filtered through a large filter crock with a finely porous bottom.

The privy at the dairy is below the building, on a slight down grade, and contains a well-limed box which is emptied at intervals. Any leakage would run down hill away from the dairy.

The milk is obtained from cows kept on the place, and the cow stable is perfectly clean. The cows are milked in the open air, and the milk is at once put into clean buckets, and taken to the dairy.

The manure pile is often covered with lime, and the excess of fluid seems to gradually soak into the ground at the edge of the woods.

Respectfully submitted,

Wm. R. Stokes, *Biologist.*

June 21, 1899.

Catonsville, Md., June 21st, 1899.

Mr B. R.

Dear Sir: I enclose herewith the chemical and biological findings obtained in our inquiries concerning your house epidemic of typhoid fever. As was anticipated, there are probabilities in at least two directions, but the source of infection is not proven. The possibility of infection during your visit to Washington in April, is negatived by the late date (35 days later) of the first case, as well as by the illness a few days later of a child who was not in Washington with your party. Freddie Brune's visit to your house was too near the date of your first illness for him to have been the carrier.

Your milk obtained an excellent chemical report, and shows no suspicious biological content.

The ice harvested on your place is bad, though the biologist was unable to find colon bacillus among its bacteria. Our knowledge of the streams feeding this ice pond would lead us to suspect the presence of colon bacillus. Perhaps it might be found by repeated examinations of large quantities of ice.

Of the four sources supplying the Catonsville Water Company, three contain the colon bacillus, the artesian well alone furnishing a water free from this germ. The water from Patapsco river, that from the dam across the small stream at the Patapsco pumping station, and that from Hause's Dam, all, according to our findings, are capable of conveying typhoid bacillus, and in the raw state are all unfit for drinking water.

It is of course not possible that your family became infected by drinking the boiled water, and if your infection arrived by the Company's pipes, it must have gotten into your filter at.

some time, either raw or nearly raw. Your filter propagated bacteria at such rate that one may reasonably believe that once infected with typhoid bacillus it was capable of infecting any quantity of sterile water that might afterward be put into it.

Thus you see suspicions rest unequally upon your home-cut ice and upon the Catonsville water supply. If there occurred last winter any case of typhoid fever on the small watershed supplying your ice pond, it is possible that you may have put away infected ice. The great weight of probability, however, points to the Catonsville water, as certainly dangerous, if not in this instance guilty. The findings of the chemist, and of the biologist, as well as our acquaintance with the streams, are all against the supply as a whole, and against the Patapsco river particularly.

Yours very truly,

JOHN S. FULTON, *Sec'y.*

The following is a copy of the results of the various bacteriological examinations made in connection with the above-mentioned investigation:

TABLE OF WATER EXAMINATIONS.

TAP, STREAM, WELL OR SPRING.	DATE.	COLONIES PER C. C.	COLON BACILLUS.	QUALITY.
Intake at Patapsco river, Catonsville	June 2.	Aerobic, 936 Anaerobic, 38	Present in 50 C. C.	Bad.
Dam across stream, "	" 2.	Aerobic, 300 Anaerobic, 108	Present in "	"
Artesian well, "	" 3.	Aerobic, 12 Anaerobic, 0	None in 1 or 50 C. C.	Good.
House's dam, "	" 3.	Aerobic, 312 Anaerobic, 6	Present in 1 C. C.	Bad.
Left-hand stream toward ice pond, Catonsville	" 5.	Aerobic, 300	None in 1 or 50 C. C.	Good.
Right " " " " " "	" 5.	" 280	" "	"
Mr. Randall's home supply, "	" 5.	" 294	" "	"
" " filter " "	" 5.	" 9960	" "	Bad.
City ice, "	" 5.	Plate overgrown.	None in 1 C. C.	Good.
House, ice, "	" 5.	" 4320	" "	Bad.

SUMMARY OF WATER EXAMINATIONS.

The routine work of the water examinations shown in the following table has been done by E. M. White, Laboratory Assistant, who also conducts the ordinary correspondence with physicians, and keeps the laboratory records.

TAP, STREAM, WELL OR SPRING.	DATE.	COLONIES PER C. C.	COLON BACILLUS.	QUALITY.
Flood's Park, Baltimore County	April 2.	Aerobic, 125	None in 5 C. C.	Good.
Riverside Athletic Club, Baltimore County	" 2.	" 178	" "	Bad.
Meeter's Park, Baltimore County	" 2.	" 363	Present "	Fair.
Werner's Park, Baltimore County	" 2.	" 504	None in "	Fair.
Kirby's Park, Baltimore County	" 2.	" 498	" "	Fair.
Klein's Resort, Baltimore County	" 2.	" 5,940	" "	Bad.
Gentlemen's Driving Park, Baltimore County	" 4.	" 5,460	" "	Bad.
Kelly's Park, Baltimore County	" 4.	" 69	" "	Good.
Lakeside Park, Baltimore County	" 4.	" 113	" 50 C. C.	Good.
Lakeside Park, Baltimore County	" 4.	" 390	" "	Fair.
Gentlemen's Driving Park, Baltimore County	" 4.	" 261	" "	Fair.
Collosseum Park, Baltimore County	" 4.	" 7,740	" "	Bad.
Mrs. Montell, Glyndon, Baltimore County	" 22.	" 175,200	....	....
Intake at Patapsco River, Catonsville	June 2.	Aerobic, 936 Anaerobic, 38	Present in 50 C. C.	Bad.
Dam across stream, "	" 2.	Aerobic, 300 Anaerobic, 108	Present in "	"
Artesian well, "	" 3.	Aerobic 12 Anaerobic, ...	None in 1 or 50 C. C.	Good.
House's dam, "	" 3.	Aerobic, 312 Anaerobic, 6	Present in 1 C. C.	Bad.
Left-hand stream, toward ice pond, Catonsville	" 5.	Aerobic, 300	None in 1 or 50 C. C.	Good.
Right-hand " " " "	" 5.	" 280	" "	"
Mr. Randall's house supply, "	" 5.	" 294	" "	"
" filter " "	" 5.	" 9,960	" "	Bad.

SUMMARY OF WATER EXAMINATIONS—Concluded.

TAP, STREAM, WELL OR SPRING.	DATE.	COLONIES PER C C.	COLON BACILLUS.	QUALITY.
City ice, “	“ 5.	Plate overg'n	“ 1 C. C.	Good.
House ice, “	“ 5.	“ 4,320	“ 1 C. C.	Bad.
Reservoir, Springfield Hospital..............................	“ 11.	“ 1,200	“ 1 or 50 C. C.	Suspicious
Stream, “ “	“ 11.	“ 3,787	“ “	“
Box hydrant, upper F street, Sparrow's Point.........	July 20.	“ 240	“ 1 C. C.	Good.
“ lower F “ “ “	“ 20.	“ 35	“ “	“
Dr. Woodward's office, “ “	“ 20.	“ 140 Anaerobic, 8	“ “	“
Riverside Athletic Club, Baltimore County..............	“ 20.	Aerobic, 200	“ “	“
Gentlemen's Driving Park, Baltimore County.........	“ 20.	“ 318	“ “	“
“ “ “ “ “	“ 20.	“ 462	“ “	“

TABLE OF WATER EXAMINATIONS.

TAP, STREAM, WELL OR SPRING.	DATE.	COLONIES PER C. C.		COLON BACILLUS.	QUALITY.
Collosseum Park, Baltimore County	July 20.	Aerobic,	267	None in 1 C. C.	Good.
Lakeside “ “ “	“ 20.	“	5	“ “	“
“ “ “ “	“ 20.	“	95	“ “	“
Kelly's “ “ “	“ 20.	“	1,800	“ 1 or 50 C. C.	Suspicious.
Werner's Resort, “ “	“ 20.	“	1,776	Present in 50 C. C.	Bad.
Meeter's Park, “ “	“ 20.	“	8,160	None in 1 or 50 C. C.	“
Kline's Resort, “ “	“ 20.	“	199	“ “ “	Good.
Kirby's Beach, “ “	“ 20.	“	367	“ 1 C. C.	“
Mrs. E. R. Stevenson, (spring)	“ 20	“	456	Present “	“
Spring in Mill Hollow	“ 20.	“	758	None in 1 or 50 C. C.	Fair.
“ “ “	“ 20.	“	480	“ “ “	Good.
Well 35 feet deep	“ 20.	“	228	“ “ “	“
“ “ “ “	“ 20.	“	366	“ “ “	“
George Stecker, Towson	Aug. 9.	“	211	“ 1 or 5 C. C.	“
Mrs. Mary Butler, “	“ 9.	“	162	“ “ “	“
Henry Dienstback, “	“ 9.	“	65	Present in 5 C. C.	Suspicious.
Tracy Hotel, “	“ 9.	“	72	None in 1 or 5 C. C.	Good.
Court House, “	“ 9.	“	108	Present in 1 C. C.	Suspicious.
A. Rowe, “	“ 9.	....	....	None in 1 or 5 C.C.	....
Mrs. Jessup, 42 Caton avenue, Towson	“ 9.	Aerobic,	8,940	Present in 50 C. C.	Bad.
Mrs. Ammenhaiser, Catonsville	“ 9.	“	1,764	“ “ 1 C. C.	“
E. Ide, “	“ 9.	“	238	“ “ 50 C. C.	“
Bosley Hotel, Towson	“ 9.	“	....	None in 1 or 5 C. C.	....
Gwynn Falls	Aug. 9.	Aerobic,	2,040	Present in 50 C. C.	Bad.
Spring	“ 9.	“	478	“ 5 “	“
B. F. Lankford, Princess Anne	Sept. 5.	“	242	None in 1 or C. C.	Fair.
E. A. Powell, “	“ 5.	“	570	“ “	“

TABLE OF WATER EXAMINATIONS—Continued.

TAP, STREAM, WELL OR SPRING.	DATE.	COLONIES PER C. C.	COLON BACILLUS.	QUALITY.
Mary Messick, Princess Anne	Sept. 5.	Aerobic 1,824	Present in 1 and 50 C. C.	Bad.
Everet Garey, "	" 5.	" 4,356	" 50 "	Very bad.
I. S. Hayman, "	" 5.	" 1,290	" 1 and 50 "	"
Dan Collins, "	" 5.	" 490	" 50 C. C.	Bad.
Central Hotel, "	" 5.	" 1,888	None in "	"
Mrs. M. Dryden, "	" 5.	" 370	" "	Fair.
Washington House, "	" 5.	" 3,480	" 1 or 50 C. C.	Bad.
Prince William street, "	" 5.	" 420	" 50 C. C.	"
Pump House (well), "	" 5.	" 970	" "	Suspicious.
E. A. Reed, "	" 5.	" 4,050	Present in "	Very bad.
S. T. Wilson, "	" 5.	" about 500,000	None in "	"
Gus Reed, "	" 5.	" 6,300	Present in 1 C. C.	"
W. S. McMaster, "	" 5.	" 966	" "	Bad.
Paul Jones, "	" 5.	" 1,712	" "	"
B. F. Lankford, "	" 5.	" 5,600	" 1 and 50 C. C.	Very bad.
Joshua Collins, "	" 5.	" 936	None in 50 C. C.	Suspicious.
W. O. Lankford, "	" 5.	" 1,116	Present in "	Bad.
Maryland Asylum for Feeble-minded	" 20.	" 393	None in "	Good.
" " " (tank)	" 20.	" 269	" "	"
Pump, Melvale	Sept. 20.	Aerobic, 5,100	None in 50 C. C.	Bad.
House Spring, Melvale	" 20.	" 480	" "	Fair.
Compton Spring, "	" 20.	" 3,060	" "	Bad.
Wilmer House, Betterton	" 20.	" 13,350	" 1 or 50 C. C.	"
Chesapeake Hotel, "	" 20.	" 1,008	" 50 C. C.	Suspicious.
Betterton Hotel "	" 20.	" 224	Present in 1. C. C.	Bad.
McDonogh School	" 26.	" 728	None "	Fair.
Perkins, Allegany	" 26.	" 54,000	Present "	Bad.
Cherrywell, "	" 26.	" 3,720	None in 1 or 50 C. C.	"
Ocean, "	" 26.	" 7,500	Present in 1 C. C.	"
Lord Pipe Line, "	" 26.	" 304	None in 1 or 5 C. C.	Fair.
Abbott, "	" 26.	" 5,800	" "	Bad.

J. R. Tilghman, Elkridge	Oct. 14.	Aerobic,	498	None 50 C. C.	Fair.
Daniel Laffey, "	Oct. 14.	"	111	None 50 C. C.	Good.
Mrs. Uncle, "	" 14.	"	131	" "	"
Mrs. Pitzinzer, "	" 14.	"	390	Present "	Bad.
Spencer Taylor, "	" 14.	"	8,460	" 1 C. C.	Very bad.
C. D. Kenney, Elkridge	" 14.	"	76	None 50 C. C.	Good.
Water tower, Sudbrook Park	" 16.	"	1,626	" 1 or 50 C. C.	Suspicious.
Well near railroad, " "	" 16.	"	270	" "	Good.
Terminal Hotel, Catonsville	" 16.	"	192	" "	"
Baltimore Country Club	" 16.	"	176	Present in 5 C. C.	Suspicious.
Pool by intake Pipe, Md. House of Correction	Oct. 16.	Aerobic	396	Present in 50 C. C.	Bad.
Stream flowing under Rail Road, Md. House of Correction	" 16.	"	708	None in 1 or 50 C. C.	Fair.
Gardner's Canning House, Md. House of Correction	" 16.	"	4,500	Present in 50 C. C.	Bad.
Intake pipe East of Rail Road, Md. House of Correction	" 16.	"	2,220	" "	"
Jas. Lindsay, Saloon, Towson	" 18.	"	54	None in 1 C. C.	Good.
Maj. John Yellott, "	" 18.	"	3,780	Present in 1 C. C.	Very bad.
H. Dienstback, "	" 18.	"	81	None in 1 or 50 C. C.	Good.
Court House, "	" 18.	"	31	" "	"
Mary Butler, "	" 18.	"	258	" "	Fair.
Bosley's Hotel, "	" 18.	"	41	" 1 C. C.	"
J. W. Watkins, "	" 18.	"	59	" "	Good.
Urben's Hotel, "	" 18.	"	438	" "	"
Tracey's Hotel, "	" 18.	"	65	" 1 or 50 C. C.	"
W. Martin, Union Bridge		"	330	" 1 C. C.	"
Wood's well, Lonaconing	Oct. 26.	"	1,400	" 1 or 50 C. C.	Suspicious.
Stamp Spring, "	" 26.	"	12,000	" "	Bad.
Shaw's " "	" 26.	"	5,580	Present in 50 C. C.	"
Conner's well, "	" 26.	"	1,008	None in 1 or 50 C. C.	Suspicious.
Lonaconing Water Co. (spigot A)	" 26.	"	540	Present in 50 C. C.	Bad.
" " " (spigot B)	" 26.	"	480	None in 1 or 50 C. C.	Fair.
Hogan's well, Lonaconing	" 26.	"	6,660	Present in 50 C. C.	Bad.
Maj. Yellott, Towson	Nov.	"	756	" "	Bad.
Jacob Zeltman, Howard County	Nov. 13.	Aerobic,	640	Present in 50 C. C.	Bad.

TABLE OF WATER EXAMINATIONS—Continued.

TAP, STREAM, WELL OR SPRING.	DATE.	COLONIES PER C. C.	COLON BACILLUS.	QUALITY.
Mrs. K. Kurtz, Oregon	" 14.	" 6,000	None in 1 or 50 C. C.	Very bad.
John Crowthers, near Cockeysville	" 21.	" about 500,000	Present in 50 C. C.	" "
Mrs. Mary Price, "	" 21.	" 18,000	" "	" "
W. H. Wight, " "	" 21.	" 5,820	" "	" "

Respectfully submitted,

WM. ROYAL STOKES, M.D.,

Bacteriologist to State Board.

REPORT OF THE CHEMIST.

DR. JOHN S. FULTON, *Secretary State Board of Health.*

MY DEAR SIR: The Chemical Laboratory has reported during the year 1899, up to December 15th, the following analyses: Private water supplies, 126; public water supplies, 62; mineral waters, 12; normal chlorines, 69; total analyses, 269.

The distribution of the work, according to counties and the analyses of the more important supplies of public interest, are shown on the tabulation following this general report. The work of the chemical department has consisted entirely of investigations of the various water supplies. This was necessary on account of the constant demands made on the department from various parts of the State where there was typhoid fever. It is to be regretted, however, that some of the important articles of food could not be investigated, as it has been found in other States that the quality of many food products is improved by such investigations, without a corresponding increase in cost to the consumer.

Respectfully yours,
W. B. D. PENNIMAN, PH.D.,
Analyst State Board of Health.

Distribution of Water Analysis, Showing Work Done for each County.

COUNTIES.	Private Supply. Good.	Private Supply. Bad.	Public Supply. Good.	Public Supply. Bad.
Anne Arundel	0	2	0	0
Alleghany	0	3	1	1
Baltimore	8	56	8	25
Carroll	0	1	2	2
Caroline	0	2	0	0
Cecil	1	6	0	0
Dorchester	0	1	0	0
Frederick	0	0	0	3
Howard	2	6	0	0
Kent	1	6	2	1
Montgomery	1	4	0	0
Prince George's	0	1	0	0
Somerset	0	23	0	2
Talbot	0	1	0	0
Queen Anne's	0	1	4	0
Washington	2	4	0	1
Totals	15	117	17	36

ANALYSIS OF PUBLIC WATER SUPPLIES.

SOURCE OF SAMPLE.	FIGURES IN "PARTS PER GALLON."						
	Total Residue at 230° F.	Chlorine.	Nitrogen as Free Ammonia.	Nitrogen as Albumenoid Ammonia.	Nitrogen as Nitrates.	Nitrogen as Nitrites.	Condition of Water.
CHURCHES AND SCHOOLS.							
S. D. Church, Westport, Md.	164	22.5	Trace	.083	5.75	None	Bad
Govanstown Pres. Church...	173	18.5	.15	.07	3.75	Present	Bad
(1) Lauraville Public School.	20	5.9	.134	.12	None	....	....
(2) McDonogh School spring, on Painter's Swamp..........	159	4.	.053	.072	.45	Present	Bad
(3) Md. House of Correction—Ditch flowing into stream below institute pipe......	50	11.8	.37	.16	Trace	Present	Bad
Pool at institute pipe........	40	4.2	.07	.075	.5	None	Bad
Stream above institute pipe	38	4.2	.06	.075	.3	Trace	Bad
Md. School for Feeble-minded (two supplies.....	54	2.6	Trace	Trace	1.4	None	Good
	142	3.9	Trace	Trace	1.75	None	Good
(4) Second Hospital for Insane (four samples)—							
Sample June 6, 1899........	140	3.85	.07	.08	2.15	Present	Bad
" July 14, 1899........	132	5.9	Trace	Trace	2.95	Trace	Good
" Aug. 19, 1899........	156	17.9	Trace	.15	5.00	Trace	Bad
" Sept. 5, 1899........	58	3.6	Trace	.06	.9	None	Good
CLUBS AND RESORTS FOR PUBLIC AMUSEMENT.							
Baltimore County.							
Riverside Athletic Club.......	314	17.5	Trace	.047	10.95	None	Bad
(5) Kirby's Beach................	56	5.	Trace	.038	1.3	None	Bad
Meter's Park......................	114	11.2	.075	.045	1.8	Present	Bad
Klein's Resort....................	62	8.9	Trace	.03	1.9	Present	Bad
(5) Werner's Resort............	58	8.1	Trace	.045	1.55	None	Bad
(5) Kelley's Resort..............	46	5.2	Trace	.042	.75	None	Bad
Collosseum Park................	182	5.8	Trace	.054	2.35	None	Good
Lakeside Park Crystal Sp'g..	76	3.3	Trace	Trace	1.80	None	Good
Lakeside Park Md. Spring...	80	5.9	Trace	Trace	1.80	Trace	Bad
Gentlemen's Driving Park—Artesian well....................	128	3.2	Trace	.03	2.05	None	Good
Dug well.........................	156	9.5	None	.02	1.95	None	Bad
Baltimore Country Club.......	116	12.6	.045	.06	Trace	Present	Bad
(3) Baltimore Pleasure Club..	50	8.9	.06	.09	5.	None	Fair
Frederick County.							
Park Spring, Brunswick......	138	14.2	Trace	.03	4.	None	Bad
Washington County.							
Oak Spring, Hagerstown.....	445	27.5	0.8	.07	6.45	Trace	Bad
Allegany County.							
C. C. Co.'s Public Spring, Bois, Md.........................	160	3.4	.06	.06	3.25	Present	Bad

ANALYSIS OF PUBLIC WATER SUPPLIES—Concluded.

FIGURES IN "PARTS PER MILLION."

ERRATUM.

For "parts per gallon" read "parts per million."

	Total Resi	Chlorine.	Nitrogen monia.	Nitrogen Ammon	Nitrogen	Nitrogen	Condition
Town Supplies.							
Catonsville, artesian well.....	168	5.2	.15	.19	3.15	None	Good
(3) Stream near Patapsco.....	162	7.4	None	.068	.9	None	Fair
Intake pipe, Patapsco river..	128	5.2	.065	.068	1.2	Trace	Bad
Hause's dam.....................	162	5.4	Trace	Trace	.75	Present	Bad
Bois C. Coal Co.'s pumping station.........	306	4.6	Trace	.09	1.50	None	Good
Towson, artesian well, public supply......................	54	3.	Trace	Trace	.5	None	Good
Sudbrook Park....................	78	2.9	.021	.153	.5	None	Good
(6) Centreville, artesian well	170	3.9	.375	.102	Trace	None	....
" "	170	3.9	.37	.09	Trace	None	....
" "	168	3.9	.29	.05	Trace	None	Good
" '	168	3.9	.27	.06	Trace	None	Good
(7) Supplies of Hotel and Other Semi-Public Supplies.							
Betterton, Chesap'ke House, Sept. 1...........................	122	14.5	None	None	4.2	Trace	Bad
Betterton, Chesap'ke House, Sept. 27..........................	58	15.3	Trace	.03	4.25	Trace	Bad
Betterton, Wilmer House.....	130	14.5	None	.06	4.65	None	Good
Brunswick, McDonald House	206	92.2	Trace	.03	12.8	Trace	Bad
" Lucas House......	154	113.4	Trace	.03	11.10	Trace	Bad
Princess Anne, Cent. Hotel..	738	10.9	.08	.15	2.	None	Bad
Princess Anne, Washington Hotel..............................	2,265	12.72	.08	.16	2.50	None	Bad
Towson, Bosley's Hotel........	874	144.9	Trace	.02	19.8	Trace	Bad
" Court House...........	266	50.9	.048	.015	5.01	Present	Bad
" Tracey's Hotel.......	308	32.1	Trace	Trace	6.13	Present	Bad
" Urban's Hotel........	220	52.5	.02	.05	4.5	Trace	Bad
Catonsville, Terminal Hotel.	162	36.	.03	.08	None	None	Bad

1. Analysis made in duplicate. Decision reserved awaiting bacteriological examination.

2. Examination made to ascertain if spring could be used as a supply for school. Condemned on account of vegetable contamination.

3. This contamination is of vegetable origin.

4. These analysis were made under Dr. Clark's supervision to determine the best supplies for the hospital.

5. Condemned on sanitary survey.

6. On account of the depth of this well the ordinary standards for judging it do not hold.

7. The analysis given does not comprehend all supplies used in towns and villages by the public or travellers. In many instances when wells are on the street the fact is not noted by the health officers sending the samples.

8. During the year ten (10) duplicate analysis of public supplies were made which, on account of exact correspondence with the previous analyses, are not shown on the above report.

ANALYSIS OF PUBLIC WATER SUPPLIES.

FIGURES IN "PARTS PER GALLON."

Churches and Schools.

	Total Resi	Chlorine.	Nitrogen monia.	Nitrogen Ammoni	Nitrogen	Nitrogen	Condition
S. D. Church, Westport, Md.	164	22.5	Trace	.083	5.75	None	Bad
Govanstown Pres. Church...	173	18.5	.15	.07	3.75	Present	Bad
(1) Lauraville Public School.	20	5.9	.134	.12	None	....	....
(2) McDonogh School spring, on Painter's Swamp..........	159	4.	.053	.072	.45	Present	Bad
(3) Md. House of Correction—							
Ditch flowing into stream below institute pipe......	50	11.8	.37	.16	Trace	Present	Bad
Pool at institute pipe........	40	4.2	.07	.075	.5	None	Bad
Stream above institute pipe	38	4.2	.06	.075	.3	Trace	Bad
Md. School for Feeble-	54	2.6	Trace	Trace	1.4	None	Good
minded (two supplies.....	142	3.9	Trace	Trace	1.75	None	Good
(4) Second Hospital for Insane (four samples)—							
Sample June 6, 1899........	140	3.85	.07	.08	2.15	Present	Bad
" July 14, 1899........	132	5.9	Trace	Trace	2.95	Trace	Good
" Aug. 19, 1899........	156	17.9	Trace	.15	5.00	Trace	Bad
" Sept. 5, 1899........	58	3.6	Trace	.06	.9	None	Good

Clubs and Resorts for Public Amusement.

	Total Resi	Chlorine.	Nitrogen monia.	Nitrogen Ammoni	Nitrogen	Nitrogen	Condition
Baltimore County.							
Riverside Athletic Club.......	314	17.5	Trace	.047	10.95	None	Bad
(5) Kirby's Beach................	56	5.	Trace	.038	1.3	None	Bad
Meter's Park......................	114	11.2	.075	.045	1.8	Present	Bad
Klein's Resort....................	62	8.9	Trace	.03	1.9	Present	Bad
(5) Werner's Resort.............	58	8.1	Trace	.045	1.55	None	Bad
(5) Kelley's Resort..............	46	5.2	Trace	.042	.75	None	Bad
Collosseum Park.................	182	5.8	Trace	.054	2.35	None	Good
Lakeside Park Crystal Sp'g..	76	3.3	Trace	Trace	1.80	None	Good
Lakeside Park Md. Spring...	80	5.9	Trace	Trace	1.80	Trace	Bad
Gentlemen's Driving Park—							
Artesian well.....................	128	3.2	Trace	.03	2.05	None	Good
Dug well..........................	156	9.5	None	.02	1.95	None	Bad
Baltimore Country Club.......	116	12.6	.045	.06	Trace	Present	Bad
(3) Baltimore Pleasure Club..	50	8.9	.06	.09	5.	None	Fair
Frederick County.							
Park Spring, Brunswick......	138	14.2	Trace	.03	4.	None	Bad
Washington County.							
Oak Spring, Hagerstown.....	445	27.5	0.8	.07	6.45	Trace	Bad
Allegany County.							
C. C. Co.'s Public Spring, Bois, Md.........................	160	3.4	.06	.06	3.25	Present	Bad

ANALYSIS OF PUBLIC WATER SUPPLIES—Concluded.

Source of Sample.	FIGURES IN "PARTS PER MILLION."						
	Total Residue at 230° F.	Chlorine.	Nitrogen as Free Ammonia.	Nitrogen as Albumenoid Ammonia.	Nitrogen as Nitrates.	Nitrogen as Nitrites.	Condition of Water.
Town Supplies.							
Catonsville, artesian well	168	5.2	.15	.19	3.15	None	Good
(3) Stream near Patapsco	162	7.4	None	.068	.9	None	Fair
Intake pipe, Patapsco river	128	5.2	.065	.068	1.2	Trace	Bad
Hause's dam	162	5.4	Trace	Trace	.75	Present	Bad
Bois C. Coal Co.'s pumping station	306	4.6	Trace	.09	1.50	None	Good
Towson, artesian well, public supply	54	3.	Trace	Trace	.5	None	Good
Sudbrook Park	78	2.9	.021	.153	.5	None	Good
(6) Centreville, artesian well	170	3.9	.375	.102	Trace	None	....
" "	170	3.9	.37	.09	Trace	None	....
" "	168	3.9	.29	.05	Trace	None	Good
" '	168	3.9	.27	.06	Trace	None	Good
(7) Supplies of Hotel and Other Semi-Public Supplies.							
Betterton, Chesap'ke House, Sept. 1	122	14.5	None	None	4.2	Trace	Bad
Betterton, Chesap'ke House, Sept. 27	58	15.3	Trace	.03	4.25	Trace	Bad
Betterton, Wilmer House	130	14.5	None	.06	4.65	None	Good
Brunswick, McDonald House	206	92.2	Trace	.03	12.8	Trace	Bad
" Lucas House	154	113.4	Trace	.03	11.10	Trace	Bad
Princess Anne, Cent. Hotel	738	10.9	.08	.15	2.	None	Bad
Princess Anne, Washington Hotel	2,265	12.72	.08	.16	2.50	None	Bad
Towson, Bosley's Hotel	874	144.9	Trace	.02	19.8	Trace	Bad
" Court House	266	50.9	.048	.015	5.01	Present	Bad
" Tracey's Hotel	308	32.1	Trace	Trace	6.13	Present	Bad
" Urban's Hotel	220	52.5	.02	.05	4.5	Trace	Bad
Catonsville, Terminal Hotel	162	36.	.03	.08	None	None	Bad

1. Analysis made in duplicate. Decision reserved awaiting bacteriological examination.

2. Examination made to ascertain if spring could be used as a supply for school. Condemned on account of vegetable contamination.

3. This contamination is of vegetable origin.

4. These analysis were made under Dr. Clark's supervision to determine the best supplies for the hospital.

5. Condemned on sanitary survey.

6. On account of the depth of this well the ordinary standards for judging it do not hold.

7. The analysis given does not comprehend all supplies used in towns and villages by the public or travellers. In many instances when wells are on the street the fact is not noted by the health officers sending the samples.

8. During the year ten (10) duplicate analysis of public supplies were made which, on account of exact correspondence with the previous analyses, are not shown on the above report.

CLERICAL REPORT.

Ordinary correspondence, (letters)	1,226
Vital statistics inquiries	443
Mimeograph letters	1,096
Circulars, announcements, programmes	2,860
Birth certificates filed	5,090
Death certificates filed	5,668
Death certificates copied on register	4,121

Tables made from 3,184 death certificates, or those certificates received from January 1 to July 1, 1899.

Reports of chemical examinations	358

M. L. RULLMAN, *Clerk.*

President's Address.

Maryland Public Health Association, May 11, 1899.

DR. EDWARD M. SCHAEFFER, BALTIMORE.

The record of the past year is one of which our membership may well be proud, and for which the general public, deeply grateful. I take for granted that every one of us is interested in the work which the State Board of Health, through its most efficient Secretary, is inaugurating and accomplishing. Scattered as is our membership throughout every county of this beautiful State of Maryland, each has a duty of co-operation to discharge, assisting local health officers, awakening intelligent public sentiment along sanitary lines, and setting an example of enlightened, conscientious, good citizenship.

Glancing over this Report, you will observe that one county in the State is still unprovided with a board of health or even local officer.

Twelve important towns are enumerated which have no local boards of Health, although most of them have a health officer on whose shoulders rests the responsibility and odium of abating public nuisances, lowering the mortality and sickness rate, and thereby incidentally improving real estate values, attracting new enterprise and capital to a permanent residence; not to speak of the summer boarder, who is no mean desideratum in rural communities. Here you may read of perils by water and perils by milk, due as is justly stated to criminal ignorance and indifference; and it is your own fault if you are not guided accordingly in planning your summer vacations. Typhoid fever, a filth disease and a sanitary disgrace, averages about a thousand innocent victims a year, and yet is one of the most easily prevented diseases.

I take pleasure in quoting, on the other side of the picture, the reference in the Report to one town of less than three thousand inhabitants, which "has its own registration of vital statistics, issues burial permits, enforces the (contagious disease) notification ordinances, practices isolation and disinfection at public cost, makes systematic inspections, uses the newspapers to propagate a knowledge of hygiene, and makes detailed and truthful reports to the State Board of Health." Health, wealth and happiness attend the future of Brunswick, Frederick County!

While extending congratulations and felicitating ourselves and the general public on the movement for the betterment of the physical, social and moral conditions of the body politic, so conspicuously coming to the front all along the line, permit me to emphasize, without being invidious, the various village-improvement societies that have been organized, the health-protective branches of the United Women of Maryland, and here in Baltimore the record of our new Health Commissioner, the school investigations of the Arundell Club, and the work of the Children's Summer Playground Association.

SMALLPOX—A BLESSING.

Maryland has recently been blessed, from a sanitary standpoint at least, by a threatened invasion of smallpox from her neighboring States.

This danger has happily been averted to the great credit of our health authorities, State and municipal. Honorable mention is certainly due this loathsome disease and its predecessor, the cholera, for valuable services rendered the educative aims and purposes of our Association—so long as neither has applied for active membership therein.

Even the children are picking up sanitary crumbs that fall from their father's table, as this incident illustrates:

Asking a bright, little country lad, this spring, when he expected to accompany his elder brothers to school, I was gratified to hear this up-to-date answer: "As soon as I am seven years old—and *have been vaccinated.*" If he had only inserted the qualification, "successfully," he would have been a young Daniel come to judgment.

Dr. Ruhrah, the Quarantine Physician of Baltimore, gives an interesting resume of our local smallpox statistics in the April issue of the Journal of the Alumni Association of the College of Physicians and Surgeons:

"Since the fall of 1881, there have been 1,106 cases of smallpox cared for in the Quarantine Hospital, of which there are fairly complete records as to mortality and vaccination. Of the 645 unvaccinated cases, 48.8 per cent., or almost every other case, died; of the 441 cases which had been vaccinated, 378 recovered, leaving a mortality rate of only 14.3 per cent. This is high, but taking into account the otherwise unusually high mortality, it conferred a great protection. In the 20 cases where the vaccination had been unsuccessful, 14 recovered and 6 died. Almost all of the cases were in adults. Cases in vaccinated children under ten years of age were exceptional. This is a notable fact when one considers that in the pre-vaccination days smallpox was a disease of childhood as much as scarlet fever or measles of to-day."

THE SELF-EXTERMINATING ANIMAL.

Man, however, continues to be the self-exterminating animal, and very tenaciously guards his questionable distinction. I cannot imagine a more hopeless task for the last survivor than to be called on to explain to an intelligent and aged bee in what the pleasures and profits of human suicidal and fratricidal intoxication consisted.

EDUCATION THE REMEDY.

The word, Education, practically covers the whole territory. Education out of selfishness and narrow-mindedness; education in the schools and colleges for the practical duties of citizenship and conscientious parentage; education away from trivialities on the one hand, and a digest of the universe on the other, to the essentials of every-day living in righteous brotherhood. Our children must be educated "to live and let live," and when they grow up and act accordingly, as has already been said here, one of the most important factors of social discontent will have been removed.

In the words of a clear thinker: "Let us have in education, literature and analytical studies, and science with its grand constructions and sanifying discipline—all the useful elements—but let the true goal of education be kept ever in view, which is, not to enable this individual or that to shoot to a pre-eminence over his fellows, but to place the individual in right relations with his fellows, to give to each a career of useful activity, and to prevent that dreary disappointment with life and all its works which overtakes so many in their declining years."

HEALTH MUST BE EARNED.

"The art of living rightly," said the poet Goethe, "is like all arts: it must be learned and practiced with incessant care." Health must be earned—it cannot be purchased directly. As an afterthought in life, its attainment is uncertain, and full of remorse and bitter disappointment. Ignorance excuses no man, community or nation, and Nature's reckoning is, like all her laws, inexorable.

Who planned the curricula in our schools and colleges, and acquired the right to delude many graduates into believing that they were really educated, in any but a literary sense, for the stern, practical. altruistic relationships of life? I presume it was the schoolmen, "sicklied o'er with the pale cast of thought," and leading lives of seclusion, rather than men in touch with the great problems of every-day existence.

Says the scholarly Dr. Andrew Wilson, of England, after quoting the pleas of Combe and Spencer, for a rational respect for the claims of the body in education: "My one grumble in life is that while we are advancing at last in the matter of technical education in so far as trades are concerned, we linger and lag in the matter of health-teaching, that most vital of all subjects. . . . What are the opportunities for the average man or woman to acquire a training in the laws and practice of health? Is the subject taught in schools? Is it made a compulsory and essential part of ordinary education—this vital knowledge which teaches us how to live long and to live happily? . . . It is better to be healthy than learned when all is said and done."

If any parents who make no protest against this mediæval system of polite learning reckon their offspring among those "unfitted to survive," they will soon find in this age when law, both human and Divine, counts every man "his brother's keeper," in a sanitary sense, that neighbors may decline to take a fatalistic view of their likewise early decease, and proceed to take out a writ of benevolent assimilation as a corrective.

It is high time to awake out of sleep. This promises to be a banner year for all public school interests in Maryland, and especially in Baltimore under the Magna Charta.

Let each earnest friend of true education now resolve to get out a new edition of himself, if need be, and lay in a liberal stock of "mental disinfectants" for use wherever most indicated in his community. I have borrowed this phrase from an amusing and vigorous poem. It is not by Kipling, but quite apropos of our friend, the common enemy:

"Yes, when spring-cleaning comes around
  Bring forth the duster and the broom,
But rake your fogy notions down,
  And sweep your dusty soul of gloom.
Sweep old ideas out with the dust,
  And dress your soul in newer style;
Scrape from your mind its worn-out crust,
  And dump it in the rubbish pile.

Clean out your moral cubby-holes,
  Sweep out the dirt, scrape off the scum;
'Tis cleaning time for healthy souls—
  Get up and dust. The spring has come!
Clean out the corners of the brain,
  Bear down with scrubbing brush and soap,
And dump old Fear into the drain,
  And dust a cosy chair for Hope.

Scrub up the windows of the mind,
  Clean up and let the spring begin;
Swing open wide the dusty blind,
  And let the glorious sunshine in.
Yes, clean your house, and clean your shed,
  And clean your barn in every part,
But brush the cobwebs from your head,
  And sweep the snowbanks from your heart!"

—*S. W. Foss.*

FALSE GODS.

The true reformer's lot is not a happy one—he is between two dangers: his own enligtened sincerity and earnestness, the impelling force, and the ignorance, apathy and prejudices of the public at large, a rather disheartening and repelling obstacle. With charity to all and malice to none, let him, however, speak the truth, modestly, tactfully, fearlessly, as he knows, feels, and *lives* it.

Fetish-worship, the belief in amulets, charms, Christian Science, falsely so-called (for, as Rev. Dr. Parkhurst says, "it is neither Christian nor scientific,") patent medicines, horse-chestnuts, rabbits' feet, camphor bags, amber necklaces, etc., all these represent phases of human credulity and self-deception, not to speak of intentional fraud and avarice, which keep people from the temples of the true goddess of health, Hygeia. The gods help those who help themselves—by the intelligent and discriminating use of the every-day, duly appointed means of grace and salvation. Persons who throw themselves down from the pinnacle of seductive sophistry and speculation to test their faith and heal "the mental conceptions of disease in their non-existent bodies," will be very likely to crush what anatomists call bones and vital organs, in such an effective way as to earn premature burial from a prosaic, matter-of-fact world.

And what shall we say of patent medicines and nostrums? The habit of mind which takes on this form of periodical insanity is well nigh universal.

"Hungry is the Anglo-Saxon throat for medicine," as Dr. Wood recently remarked before a medical convention in this city. "Nostrums represent a lottery where few get prizes. . . . The embalmment of a lie in printer's ink makes it as indestructible as a dried mummy. . . . The public knows it all, while the doctor learns by hard study that he knows but little. . . . When the sheep wish to be devoured, the wolf can hardly be blamed." Dr. Wood sums up the conclusion of the matter as follows: "So long as there be trout to rise, so long will there be fishermen to make their deadly casts. The credulous, the ignorant, the men and women who want to be deceived, the despairing who grasp at every floating straw, will exist until the coming of the millenium demonstrates that through the succession of the ages the suffering of innumerable human units has perfected human nature; but let us see to it that we in no way aid those who, serving the father of all liars, wax rich and wanton on the miseries of their fellows."

One influence we can exert in favor of clean, respectable and honest journalism. It is nothing less than an insult for any paper that aspires to be read in the family circle to flaunt the portraits of quacks and their simple-minded dupes, along with the pseudo-medical drivel of pretenders, male and female, living or long since dead, bent on mercenary humbuggery or criminal immorality, in the faces of decent, self-respecting people. Few there be that spare us!

EDUCATED IN WHAT?—AND FOR WHAT?

Before concluding, I would revert to the all powerful lever of education and the waiting opportunity of the schools and colleges. (Some one has wittily retorted that if Vassar introduces Domestic Science for the women, Yale should teach the Art of Husbandry. This is a fair bargain.)

We must see to it that our children are not educated out of their bodies and wits. Their natural needs for healthy, symmetrical growth and development are certainly worthy of as much thoughtful consideration as stock-raisers bestow on the brute creation. Dr. Eastman, of Indianapolis, writes as follows: "It is quite customary for parents to move to towns and cities to educate their children—educate them in what? and for what? and what is education anyhow? If it is to strengthen the mind and weaken the body, to stuff them with knowledge with no wisdom to apply it, I object; if to dicker off health for book knowledge, I protest. If it is to develop the physical as well as the mental, as is suggested by the modern gymnasium in connection with the college, if it is to teach the simpler modes of eating, sleeping and exercise of our ancestors, the art of living according to nature's laws, if it is to fill the mind with such principles as make the coming generation healthier and therefore happier, happier and therefore healthier, to develop brawn as well as brain, I approve. The Universities of Cambridge and Oxford, of Harvard, Yale and Princeton, have graduated many a man who did not even know what to eat or how to eat it."

As Dr. Hartwell affirms in his last report on physical training (1899): "Progress has been materially impeded by the prepossessions and prejudices of the teaching class, which, like the general public, is still largely ruled by ancient and traditional conceptions of mind and body, and has so feeble a comprehension of the new physiology and the new psychology that it is unprepared to acknowledge the just claims of Physical Education."

A notable conference was held in Boston last month, at which President Eliot of Harvard spoke on the meaning and scope of this very theme. "I should like," said he, "to throw out of consideration the whole question of college athletics. They do not seem to me to be a part of what we should practically understand by physical training. They are an enormous exaggeration of anything desirable in the form of physical training. We mean by physical training the long course of development of the body from the age of four or five to full maturity. We must get rid altogether of the word 'physical' in this connection. The Greeks had a far better conception of the relation of the training of the body to that of the mind.

"We inherit, at least I think in this part of the country, a notion that the body is somehow contemptible—a thing to be despised, over-ruled, troddden under foot, despised generally, and we carry this view of physical training into education. The word 'physical' is an encumbrance to us. Man is a combination of physical, intellectual and moral qualities, and they all go together in education—they must go together. Leaving out exceptional cases, what we know in education is the harmonious, symmetrical development of the whole being, physical, intellectual and moral, taken together. Generally, good physique and good nerves go with a good mind and an available, controlling will. The men who succeed in business, in professions, in occupations which combine mental exercise with physical practice, are greatly superior to the average man physically. I think the present faculty of Harvard College is a remarkably tough set of men. They have the bodily capacity for prolonged, strenuous attention, and there is no better evidence of physical fitness than that.

"And it is this combination of powers that a prolonged course of education aims to develop. It is this we mean and not the development of the muscular system or the body by itself."

Dr. Hartwell at the same meeting urged that physical education (broadly and scientifically interpreted—not taught by pugilists and acrobats as in my boyhood days) lies at the basis of all education, and that consequently schools are nowhere in America properly organized, and will not be until the physical trainer takes his place with the rest of the school faculty.

I close with a summary of the changes and remedies necessary (most applicable to our local conditions) which I take from a teacher's address by Dr. Hartung, of Chicago, December, 1898:

1. "Revision of our present educational system on a more rational and hygienic basis.

2. "More consideration for the physical development of the pupils by means of daily systematic exercise under supervision of special teachers.

3. "Physical education should be placed on an equal footing with the mental.

4. "Every school, especially in our large cities, should be provided with a perfectly equipped gymnasium and playgrounds in the immediate neighborhood.

5. "Regular sanitary inspection of the schools and medical examinations of the pupils from time to time.

6. "Shortening of the periods of study and their proper arrangement with reference to the teaching of physiology and psychology.

7. "Establishment of special summer schools and institutions of recreation for debilitated, anemic and backward children during vacation in healthy locations outside of cities.

8. "Every teacher should be trained and qualified to teach at least such exercises as may be practiced in the schoolrooms.

9. "More male teachers should be employed, especially for boys and the higher grades; also, in their selection as much attention should be paid to their physical fitness as to their mental and moral qualifications.

10. "Home work should be reduced to the lowest possible minimum, and children be advised to spend as much time as possible in the open air.

11. "Teachers should possess a thorough knowledge of the laws of health, hygiene of the schoolroom and the physiology of physical training.

12. "Periods of study should alternate with recesses in the open air and periods of relaxation, or play, while the schoolroom is being ventilated."

While some of these demands may be hard to meet, still they deserve consideration of all thoughtful educators.

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ANNUAL REPORT

—OF THE—

STATE BOARD OF HEALTH

—OF—

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—FOR THE—

YEAR ENDING DECEMBER 31, 1900.

BALTIMORE:
PRESS OF KING BROTHERS.
1901.

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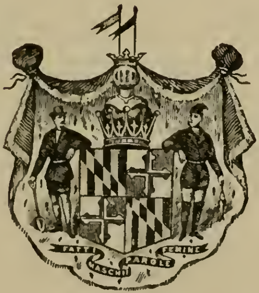

BALTIMORE:
PRESS OF KING BROTHERS,
1901.

STATE BOARD OF HEALTH, 1900.

Dr. Wm. H. Welch, President,	Baltimore.
Dr. James Bosley, Health Commissioner of Baltimore City, *Ex Officio.*	
Hon. Isidor Raynor, Attorney-General, *Ex Officio.*	
Dr. John Morris,	Baltimore.
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EMPLOYEES.

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Dr. Wm. R. Stokes, Bacteriologist,	Baltimore.
C. N. Mitten, Inspector,	Baltimore.
M. L. Rullman, Clerk,	Baltimore.
E. M. White, Laboratory Assistant,	Baltimore.
E. M. Rullman, Clerk of Vital Statistics,	Baltimore.

MAY 23 1902 Publisher.

Office of the
State Board of Health of Maryland,
10 South Street, Baltimore.

November 12, 1901.

To the Honorable John Walter Smith,
Governor of Maryland,
Annapolis, Md.

Sir: I have the honor to transmit herewith the Annual Report of the State Board of Health for the year ending December 31, 1900.

The appearance of the volume was delayed by the failure of the Legislature to appropriate sufficient money to print the Report. This delay has been utilized in working out the returns of death for the year 1900, and has enabled us to present some of the results which followed the amendments made by the Legislature of 1900 in the Vital Statistics law.

We present for the first time in the history of the State an approximate account of a year's losses through death, and an accurate exhibit of the relative importance of those causes of death which are preventable. Among the preventable diseases, we particularly direct your attention to the overshadowing importance of tuberculosis, a disease which many States have found it profitable to deal with directly, and which Maryland should single out for direct attack.

Particular attention has been directed during the year to the inspection of animals and meat at certain abattoirs, and these investigations show that the interests of the State are not well defended by the means now provided for this purpose, and that the traffic in inferior and diseased meat is but slightly embarrassed by our efforts.

The epidemic of small-pox which has been steadily increasing in the United States since 1898 has inflicted no great injury upon Maryland. This good fortune we attribute to the general belief of the people of Maryland in the value of vaccination, and to the vigilance of local authorities particularly in the jurisdictions adjacent to infected areas in neighboring States.

Yours very truly,

William H. Welch,
President.

While the returns for 1898 and 1899 represented not more than 60 per cent. of the total loss of the State in those years, and although in certain sections of the State the returns were not one-tenth part complete, they were, nevertheless, valuable for certain sanitary purposes, and were probably worth what they cost.

The physician's certificate, provided for in the Act of 1898, becomes, by the Act of 1900, the documentary evidence upon which the sub-registrar decides whether or not a permit to bury may be issued, and since such a certificate must be presented before a permit can be granted, the record of every death necessarily passes into the custody of the State before the body is disposed of. Thus it has come about that no death can now escape official record unless through official neglect, or through such accident or crime as may conceal the fact of death. This therefore brings us in reach of complete and exact returns of practically all deaths occurring within the State.

The enactment of such a law marks an important epoch in the sanitary history of the State, and has, besides, some political significance. In this law the State for the first time asserts her interest in every person who dies within her borders, without distinction as to the worth of the individual life or the manner of the individual death. Hitherto the State has taken particular note only of such deaths as were or seemed to have been due to crime.

Now, the chief facts concerning the life of every citizen and the time, place and cause of death becomes State records, and are available for a variety of uses, both public and private, as well as for the paramount purposes of furnishing to the State a reliable account of the impairment of her capital stock in human life, and to the official guardians of public health the data necessary to a profitable study of the causes and prevention of death.

The law of 1898, as amended by Act of Assembly in 1900, is as follows:

Chapter 312, Acts of 1898.

6. The Secretary of the State Board of Health shall be the State Registrar of Vital Statistics for Maryland. He shall under the direction of the State Board of Health prepare the necessary methods, books and forms for accurate registration of births and deaths, and shall supply the local registrars, health officers, ministers, physicians, undertakers, mid-wives, and other persons charged with any duty under this Act, the proper blanks,

forms and books of record. The State Registrar shall collect, tabulate and preserve the records of the vital statistics of the State. Annually, in the month of January, he shall prepare a general abstract and report of the vital statistics for the preceding year, so tabulated and arranged as to render them of practical utility, and shall have printed not more than one thousand copies, of which he shall forward five copies each to the Governor and the State Librarian, one to each member of the General Assembly of Maryland, one to each local registrar of vital statisties, one to the Board of Health of each State and Territory of the United States, and the remainder to such departments, libraries, and persons as may seem to the State Registrar entitled to same.

6 A. The health officers of the various counties and the health officers of all towns and cities, not already by charter or ordinance provided with a registrar of vital statistics, shall be ex-officio local registrars of vital statistics, and shall qualify by oath, to perform faithfully their duties as such.

Chapter 431, Acts of 1900.

6 B. Each local registrar shall be empowered, with the advice and consent of the Board of Health, to designate competent persons to the number of not more than two in each election district who shall act as sub-registrars, and shall within the district for which they are appointed issue burial permits, and perform such other services under this Act as the local Board of Health may direct, during the term for which the appointing registrar was appointed.

Chapter 312, Acts of 1898.

6 C. The record of a birth shall state the date and place of its occurrence, name in full, sex and color, and the number of the child, whether living or still-born, and the names, color, occupation, birthplace and residence of parents, name and address of the physician, mid-wife or attendant at the birth. The record of a death shall state the date and place of its occurrence, name, age, sex, color, condition, birth-place, cause of death, duration of illness, the names, residence, color of parents, and the name and address of the attending physician.

6 D. Every local registrar shall distribute to all sub-registrars and other persons in his district, who, in his judgment, are likely to need them, blank forms of certificates and returns, required by law to be made to him; shall execute the provisions of all local ordinances, not contrary to law, that may be enacted to more effectually insure correct registration of births and deaths; shall record in the books furnished by the State Registrar of Vital Statistics such facts as may be therein required; shall amend his records as he may discover mistakes or omissions; shall, if possible, keep such records in a fire-proof safe; shall, on or before the tenth day of each month, transmit to the State Registrar of Vital Statistics, in the envelopes furnished for that purpose, the originals of all certificates, permits and records remaining in his possession on the last day of the month next preceding; provided that the State Registrar may, in the event of unusual

sickness or mortality, or for the purpose of legal or legislative inquiry, require of any local registrar returns at shorter intervals.

Chapter 431, Acts of 1900.

6 E. No interment of any dead body of any human being, or disposition thereof in any tomb, vault or cemetery shall be made without a permit as aforesaid from the registrar or sub-registrar of the district where said person died, or otherwise than in accordance with such permit. The certificate of death shall be signed by the physician last in attendance upon the deceased person, or by the health officer or coroner, in case of death without medical attendance or of a sudden or violent death. In all cases of death from small-pox, yellow fever, diphtheria, scarlet fever or other contagious or infectious disease dangerous to public health, the certificate of death shall be forwarded immediately, and interment shall be conducted according to the rules of the State Board of Health.

Chapter 132, Acts of 1898.

6 F. Application for a permit to disinter a human body shall be made by a presentation to the local registrar of a certificate of death properly made and containing the facts required by law for a record of a death. Upon receipt of such a certificate the registrar shall issue a permit for the disinterment. No disinterment of the body of any deceased person during the months of July and August shall be issued except when required for the purpose of a legal investigation, nor shall any such permit be issued in cases where death was caused by infectious or contagious disease, except by permission and under the direction of the local board of health.

6 G. Every mid-wife, who shall have professional charge of the mother at the birth of any child where no physician is in attendance, shall, within four days next succeeding the birth furnish the registrar or sub-registrar of the town or district wherein such birth shall have taken place, a certificate stating, from the best information which can be obtained, the name if such a child have a name, the place and date of birth, its sex, the name of the father and maiden name of the mother, the ages, color, residence and nationality of the parents, the occupation of the father, number of the child, and name and address of the attendant

6 H. Parents shall give notice to the registrar of their city, town or county of the birth or deaths of their children; every householder shall give notice of every birth and death happening in his house; the eldest person next of kin shall give such notice of the death of his kindred; the keeper of a workhouse, house of correction, prison, hospital reformatory, almshouse or other institution, and the master or other commanding officer of a ship or vessel shall give notice of every birth or death happening among the people under his charge.

6 J. The records of births and deaths shall be preserved by the registrar, and shall be open to inspection by all persons for proper purposes, by all city, town or county officials, by the State Pegistrar or his accredited representative; provided, that such examination shall be made in such a way that the contents of the registers shall not be subjected to risk of

damage or alteration, and the prompt registry of the births and deaths received by the registrar shall not be interrupted. The registrar shall promptly inquire into the facts when any omissions or discrepancies in the personal or statistical facts are called to his attention, shall truly ascertain such missing facts of record, and make a certified statement thereof to the State Registrar, and enter the correction in red ink over his official signature upon his record. The contents of the register or a copy thereof duly certified by the Registrar, shall be prima facie evidence in all courts, and for all purposes of the facts relative to any birth or death therein recorded, and shall be verified, in case of dispute, by a certified copy of the original certificate of birth or death, from the State Registrar.

Chapter 431, Act of 1900.

6 K. The local registrar shall receive for performing the services required by this Act the following fees: For each full record and return of a birth or death twenty cents, to be paid by the county upon warrant of the County Commissioners; for a permit to disinter a human body except when required for the purpose of legal investigation, twenty-five cents, to be paid by the person to whom such permit is issued; for a copy of the record of a birth or death, twenty-five cents, together with a payment for time of search if over half an hour at the rate of fifty cents an hour, to be paid by the person to whom such copy is furnished. The State Registrar shall certify to each local registrar quarterly or oftener, if it shall be considered expedient, the number of properly executed certificates of births and deaths received from such local registrar for the year or portion of year included, provided that cities having a population of five thousand inhabitants or over, shall have power to fix the compensation of local registrars for the duties required by this Act.

Chapter 312, Acts of 1898.

6 L. The State Registrar shall receive the certificates returned under this Act. permanently bind and preserve them, make indexes thereto and issue certified statements of the facts relating to any birth or death. For each such certified statement he shall receive a fee of twenty-five cents together with payment for the time of search, if over half an hour, at the rate of fifty cents an hour, to be paid by the person asking such certified statement.

6 M. Any physician or mid-wife, coroner or undertaker, whose duty it is, who fails to report a birth as provided by section 6 G of this article shall be subject to a fine of not less than five or more than twenty-five dollars, or to be imprisoned not less than thirty days, or be both fined and imprisoned, in the discretion of the court. Any undertaker, express agent, railroad official or employe, or other person controlling, directing, or in charge of the interment, entombment, removal or other disposition of the body of a deceased person before the record shall be made as required by section 6 C of this Act shall be liable to a fine of not less than ten or more than five hundred dollars, or to be imprisoned not to exceed thirty days, or to both fine and imprisonment. Any physician, who shall

refuse or fail to make a proper and correct certificate of the cause of death of any person upon whom he or she was the last medical attendant, to the best of his knowledge or belief, shall be liable to a fine of not less than five or more than fifty dollars, or to be imprisoned not to exceed thirty days, or both fine and imprisonment. Any registrar who shall, without justifiable cause, neglect or refuse to perform any of the duties enjoined on him by this Act, or who shall communicate to any person not authorized to receive the same, any of the personal or statistical facts recorded on his register, shall be deemed guilty of a misdemeanor, and on conviction thereof shall be fined not exceeding three hundred dollars.

It was not found possible to put this law into operation simultaneously in all parts of the State. The autonomy of the counties is strictly respected in the provisions of the act, and all county boards of health were not prepared to admit the necessity or even the wisdom of such a law. In some counties the fear of expense caused considerable delay on the part of County Commissioners. Where no particular attention had been paid to the death rates, the County Commissioners viewed the cost of registering deaths at twenty cents each with exaggerated alarm. One board of County Commissioners went aghast at the absurd fear that the cost of registration would reach or exceed $1,000 a year, not reflecting apparently that the loss of five thousand citizens would be a perfectly frightful mortality, and far beyond all the experience of the most crowded cities.

It may be said in general that those counties which are most advanced in sanitary government, and whose county commissioners have been accustomed to meet regularly as local boards of health, were the earliest to put the law into effective operation. In one or two counties, however, whose past records do not indicate any particular concern for public health, the commissioners were surprisingly prompt to name their lists of two sub-registrars for each election district. In some counties there appeared a lively pursuit of these appointments, and how well some of the applicants were probably prepared to assume the duties and emoluments of the office, may be inferred from the fact that in many of the districts war, pestilence and famine would scarcely yield annual revenues of five dollars each to two officials.

One county in the State has not yet set the law in operation. This is Somerset county, where every duty relating to public health has been constantly ignored by the County Commissioners from the date of the first law on the subject, in 1882, to the present time. It is not known whether the value of the average citizen of Somerset county is so nearly insignificant as the County Commissioners appear to think, if indeed they appear to think.

The only board of health in Somerset county is at Crisfield, and here an attempt was made to operate the law. The work was, however, abandoned after the County Commissioners refused to provide for the custody of the records. This would have cost the county about fourteen dollars a year, but might have risen with the aid of Asiatic cholera to eighteen dollars. The Commissioners did not explain whether their prudence took alarm at the fourteen dollar probability, or the four dollar danger. The official report from Crisfield simply said "the Commissioners refused to pay."

In ALLEGANY COUNTY the returns have materially improved during 1900. This is conspicuously true of the city of Cumberland, where general inefficiency in the city health office was the subject of rather sharp comment in the previous annual report of the State Registrar. The improvement is due entirely to earnest administration of the registrar's office, and not at all to improved laws, for Cumberland has had for many years a good law on the subject of returns of death.

Frostburg and Lonaconing made full returns, as they did without the aid of State legislation.

From the county outside these towns the returns have steadily improved, so that the county as a whole will shortly render a complete account of its deaths. Allegany county is not yet a good registration area, though its improvement might be expected to continue but for a bad habit of frequent change of officers in the city health office of Cumberland, and in the county board of health.

ANNE ARUNDEL COUNTY shows marked improvement in registration. Returns from Annapolis are quite complete since the passage of a city ordinance on the subject, under the Mayoralty of Mr. Seidewitz, in 1899. Returns for the county as a whole are probably 30 per cent. short for 1900.

BALTIMORE COUNTY returns lack very little of completeness. The improvement in the last two or three months of 1900 was quite notable. The County Commissioners at first appointed too few sub-registrars to serve the convenience of so populous a county. Undertakers in Baltimore did not become acquainted with the provisions of the new law so promptly as might have been desired, so that many deaths must have escaped record. There are in Baltimore county a number of hospitals and other institutions supported altogether, or for the most part, by Baltimore city. Much confusion arose about the registration of deaths occurring at these places. At the present time, however, these difficulties have been adjusted, and returns from Baltimore county for 1901 will, no doubt, be full and accurate.

A change has been made by the county board of health in the manner of keeping the records. Formerly there were three sets of record books, of which two were well kept by good officers, and one was badly kept by a very poor officer. At present all the returns are made to the county health officer. There are certain advantages in the single registration office, but it is somewhat to be regretted that the Catonsville district cannot now give a satisfactory statistical account of itself as it did formerly.

It is the custom in Baltimore county to have a new health officer every year. In five years there have been five executive officers—four good ones and one bad one. None of them, except the bad one, had a chance to make a fair display of his abilities. The majority of intelligent citizens of Baltimore county do not learn the name and address of the registrar before his term expires.

CALVERT COUNTY has made good returns of deaths for two years past.

CAROLINE COUNTY returns are poor; worse, indeed, than in 1899. The county is not populous, but it is of manageable size and should make complete returns. The returns are not only incomplete, but also irregular, and for the whole year 1900 are quite 60 per cent. short. Returns for 1901 do not promise to be any more reliable.

CARROLL COUNTY has shown some improvement; great improvement, one should, perhaps, say, in view of the miserable showing made by the county in the previous two years. The present local registrar is a competent man, and has probably gone as far as should be expected against the indifference of his board. The returns of death are still poor, as compared with those of the neighboring counties. The returns are not a reliable index of the mortality, being about 50 per cent. short. The outlook for the future is however quite hopeful.

CECIL COUNTY does a little better than in the previous two years. Her returns were previously very nearly complete, and are now quite so.

Charles County does not send returns that may be relied upon as indicating the true mortality rate. One cannot find either signs of life or proofs of death in the registration office of Charles county.

In Dorchester County one sees the most notable improvement that has occurred among all the registration areas in the State. Dorchester is one of the largest counties in the State, stands tenth in population, and, in 1899, gave the poorest returns. The returns from that county are now quite reliable, and, when a full year's returns are in, will furnish reliable statistics of mortality for that important portion of the State.

Frederick County returns are now full and reliable. Brunswick and Frederick City made full returns previously under local ordinances. The noteworthy improvement in the past year is in the returns from the county at large. Returns of death for 1900 are about 10 per cent. short.

Returns from Garrett County are poor, being little better than in 1899. The county is not populous, and neglect of registration in Garrett county does not seriously impair the reliability of mortality statistics for the State as a whole. Garrett has, however, such natural advantages, and makes such claims to eminence as a healthy county, it would seem important to demonstrate its advantages and support its claims by figures. The true death rate is certainly three times that indicated by returns for 1900.

In Harford County registration has materially improved in 1900, especially in the matter of promptness. The figures will, after a year's returns have come in, give a reliable mortality rate.

Howard County returns are quite full. The local registrar has organized the registration offices in the county in a thoroughly practical way, and with the full accord of his Board of Commissioners.

Returns of death from Kent County have steadily improved, and are reliable.

Montgomery County returns have always been poor and have not materially improved. Except for Kensington and the Olney district, they are unreliable. Montgomery is thrown out of the account for 1900, and the indications at present are that she will do no better in 1901. Not more than 40 per cent. of deaths were returned in 1900.

Prince George's County sends now quite reliable returns. The county is well officered, and the County Commissioners have enabled the registrar to deal liberally with the sub-registrars, so that the work of recording both deaths and births is likely to be well done. The returns of deaths for 1900 are probably not more than 65 per cent. complete.

Registration in Queen Anne's County has improved very much since June, 1900, but the returns for the year do not show more than 75 per cent. of the probable total mortality.

Somerset County makes no returns whatever, and the population of that county is subtracted from that of the State in our calculations. Somerset does not pretend to be a healthy county.

St. Mary's County has never made good returns, and shows no sign of improvement in 1900. Only about 30 per cent. of deaths are returned, so that the county simply wastes a small amount of money on the work of registration.

Talbot County returns are improving at a rate which will make them reliable for 1901. The returns for 1900 lack about 35 per cent. of completeness.

Washington County returns will be reliable in 1901. For 1900 they are incomplete by about 25 per cent. The city of Hagerstown makes full returns, but the deficiency in the other parts of that populous county is yet considerable.

Wicomico County returns are neither full nor prompt. The returns from the town of Salisbury perhaps indicate the true mortality, but the returns from the county as a whole are fully 50 per cent. short, and this shortage needs probably no further explanation than official indifference.

In Worcester County registration has improved to quite a surprising degree in 1900. Returns of death for 1900 are probably 20 per cent. short, but the registration was 65 per cent. heavier than in 1899, and in the last few months increased so much further, that the returns of 1901 may be regarded as complete.

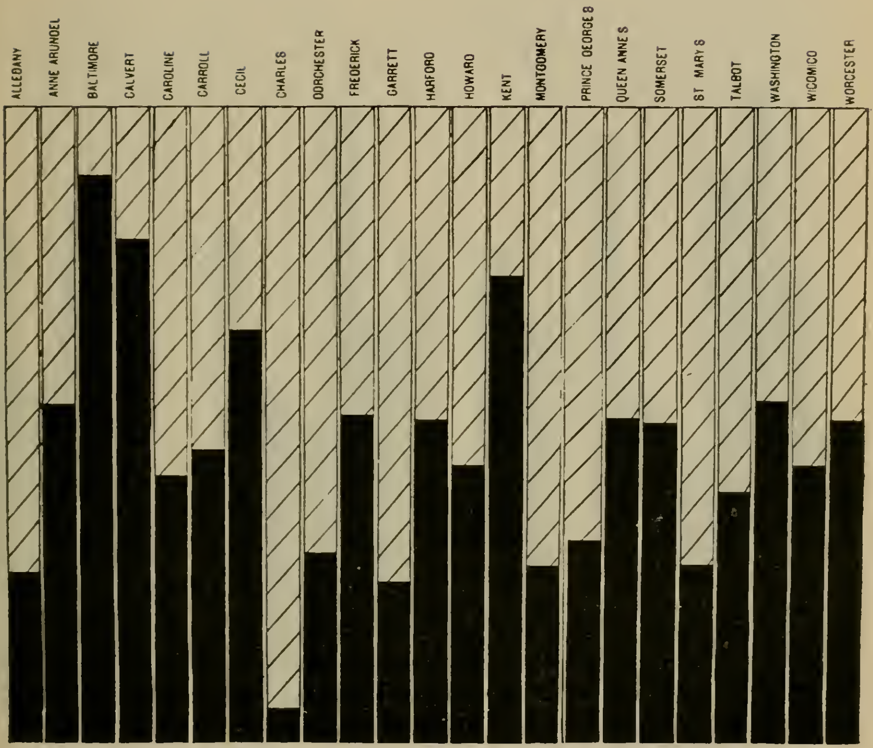


DIAGRAM A.

Showing the returns of death by counties, on an assumed mortality rate of 17 per thousand, for the year ending June 30, 1900. No burial permits.

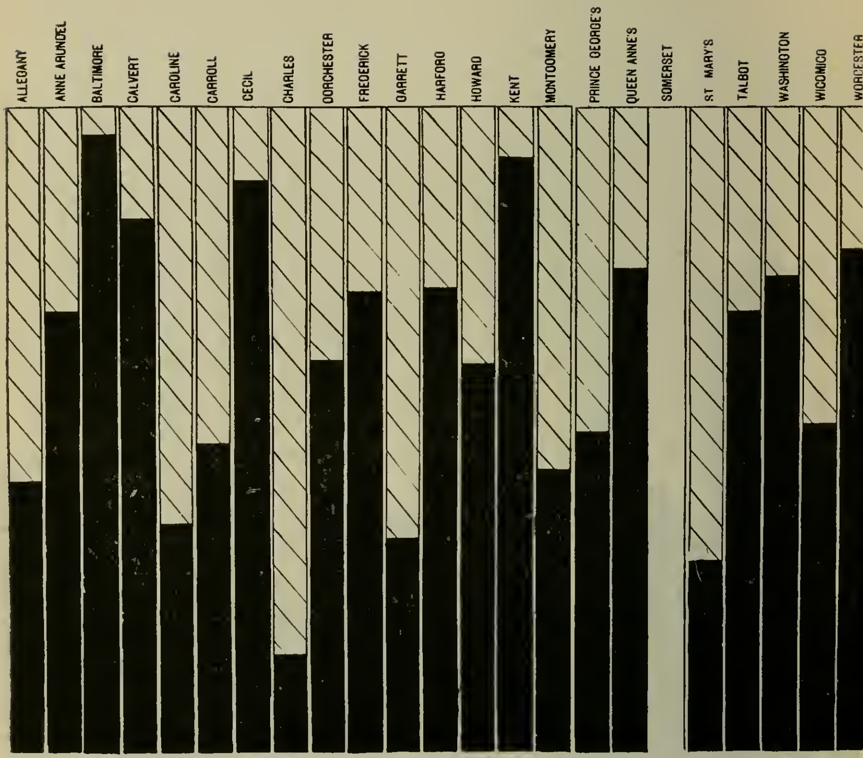


DIAGRAM B.

Showing the returns of death by counties. on an assumed mortality rate of 17 per thousand, for the year ending December 31, 1900. Burial permits from July 1, 1900.

TABLE I.

DEATHS REPORTED BETWEEN JULY 1, 1889 AND JUNE 30, 1900, BY MONTHS AND BY CAUSES.

DISEASE.	1899.						1900.						Totals.
	July.	Aug.	Sept.	Oct.	Nov.	Dec	Jan.	Feb.	March.	April.	May.	June.	
Typhoid Fever	22	29	47	33	18	20	11	10	7	3	12	6	218
Scurvy	..	..	..	..	..	..	..	..	..	1	..	..	1
Measles	..	1	..	..	..		1	6	7	9	7	8	39
Scarlet Fever	1	..	..	2	..	..	1	..	3	..	..	..	7
Whooping Cough	9	2	7	3	2	6	9	1	4	8	3	3	57
Diphtheria	10	5	17	24	22	19	19	15	18	10	9	3	171
Influenza	1	2	4	2	1	8	20	10	18	35	30	11	142
Cholera Nostras	1	1	1	1	2	..	..	1	..	..	..	..	7
Cholera Morbus	..	..	..	..	..	..	..	..	..	..	..	1	1
German Measles	..	1	..	..	..	..	..	..	..	2	..	1	4
Pyemia and Septicemia	2	..	3	1	1	2	1	2	..	2	1	2	17
Malaria	..	..	..	..	..	..	1	..	..	1	..	..	2
Tuberculosis	48	47	42	50	45	71	68	57	70	57	59	49	663
Scrofula	..	..	..	..	..	..	1	.	1		..	..	2
Syphilis	1	1	1	1	1	..	1	3	1	2	1	1	14
Cancer	7	11	10	15	11	9	4	17	10	9	7	8	118
Rheumatism	1	2	.	4	2	2	2	4	4	4	6	1	32
Diabetes	1	1	2	.	3	2	1	2	2	1	6	2	23
Addison's Disease	..	1	..	..	..	..	..	..	..	..	..	..	1
Leukemia	..	..	..	..	..	..	..	..	1	..	..	1	2
Anemia, Chlorosis	..	2	1	.	..	2	..	..	..	2	1	..	8
Other general diseases	..	..	..	..	..	..	1	..	..	..	..	..	1
Alcoholism, Acute and Chronic	..	2	1	1	1	1	1	1	4	6	3	3	24
Eucephalitis	..	1	1	..	..	..	1	..	..	..		..	3
Meningitis	11	9	2	6	2	7	9	9	15	7	7	10	94
Congestions and Hemorrhage of Brain	19	9	11	17	12	14	14	12	21	21	15	12	176
Softening of Brain	2	3	3	4	.	1	6	2	1	1	1	3	27
Paralysis without specified cause	11	18	16	16	20	7	10	16	20	25	18	19	196
General Paralysis of Insane	..	2	2	1	6	2	6	4	2	1	..	4	30
Other forms of Insanity	15	11	7	10	4	10	5	10	9	8	6	6	101
Epilepsy	1	..	.	..	2	2	4	..	2	1	1	4	17
Convulsions (not puerperal)	..	..	..	1	..	1	2	1	..	..	1	..	6
Convulsions of Infants	1	9	7	2	1	3	8	4	10	9	11	2	67
Tetanus	3	2	1	..	..	..	.	..	4	..	..	2	12
Other nervous diseases	3	1	3	6	2	1	5	..	8	5	7	5	45
Pericarditis	1	..	1	1	..	..	2	..	..	2	..	..	7
Endocarditis	..	1	.	..	..	..	1	1	1	1	1	..	6
Organic Heart Disease	35	19	26	25	24	19	21	16	22	31	29	15	282
Angina Pectoris	2	..	2	1	1	1	2	1	..	2	1	1	14
Diseases of the Arteries, Atheroma, etc	2	..	1	..	.	1	3	8	3	2	2	3	25
Varices, Varicose Ulcers, etc		..	..	..	.	..	..	..	.	..	1	1	2
Phlebitis and other diseases of Veins	1	.	..	..	..	..		..	..	..	..	..	1
Hemorrhage	..	..	..	..	2	..	..	1	..	.	.	..	3
Other diseases of Circulatory System	1	.	1	..	2	1	1	3	3	1	2	..	15
Diseases of Nasal Fossae	..	..	..	..	1	..	..	..	..	..	..	1	2
Acute Bronchitis	..		1	2	1	5	4	5	8	3	4	4	37
Chronic Bronchitis	2	2	1	2	1	2	3	4	3	3	3	..	26
Broncho-Pneumonia	..	4	1	4	6	5	7	5	9	7	3	2	53

TABLE I—*Continued.*

Disease.	1899.						1900.						Totals.
	July.	Aug.	Sept.	Oct.	Nov	Dec.	Jan.	Feb.	March.	April	May.	June.	
Pneumonia	3	6	11	17	20	29	58	62	72	78	39	11	406
Pleurisy	1		..	1	.	1	.	2	1	2	..	..	8
Congestion of Lungs	....	..	..	1	..	2	..	1	3	3	2	3	15
Gangrene of Lungs	...	..	..	..	..	..	.	1	.	..	.	..	1
Asthma and Emphysema	..	..	1	..	2	1	..	1	3	1	1	1	11
Other diseases of Respiratory System	2	2	.	2	..	..	8	1	3		4	1	23
Diseases of the Mouth and Adnexa	2	..	1	..	..	..	..	1	.	1	1	..	6
Diseases of Pharynx and Esophagus	..	1	1	..	..	..	..	..	1	..	..	..	3
Other diseases of Stomach (Cancer excepted)	3	1	4	1	3	2	3	6	1	4	3	4	35
Ulcer of Stomach	3	..	1	.	2	2	1	1	1	2	1	..	14
Infantile Diarrhœa	115	82	54	24	7	9	7	6	5	7	5	33	354
Diarrhœa and Enteritis	4	12	3	5	2	..	2	1	2	..	2	2	35
Dysentery	9	19	4	5	1		.	..	2	.	..	12	52
Hernia and Intestinal Obstructions	1	1	4	4	2	..	2	..	1	1	1	3	20
Other diseases of Intestines	1	1	2	1	..	..	..	2	1	..	2	1	11
Cirrhosis of Liver	...	2	3	..	3	2	2	5	.	1	3	5	26
Acute Yellow Atrophy of Liver	....	..	1	1	..	.	.	..	.		..	.	2
Other diseases of Liver	1	4	6	1	1	2	2	3	1	4	2	5	32
Peritonitis (not puerperal)	1	2	3	1	5	2	4	4	3	3	3	2	34
Other diseases of Divestive System	...	..	..	..	..	..	1	..	..	..	..	1	2
Iliac Abscess (Appendicitis)	....	1	5	1	1	..	1	..	..	..	..	..	9
Acute Nephritis	3	3	4	1	3	3	1	4	10	5	3	1	41
Bright's Disease	14	10	18	13	21	16	14	20	13	26	11	25	201
Other diseases of Kidneys	....	1	4	1	4	2	..	3	1	3	1	1	24
Vesical Calculi	....	..	..	..	..	1	..	..	..	..	..	..	1
Diseases of Bladder	6	2	..	2	1	1	1	1	1	..	1	..	16
Other diseases of Male Genital Organs	....	.	..	.	2	1	1	1	..	1	1	.	7
Uterine Tumors (not Cancer)	....	.	.	1	..	..	..	..	..	1	..	..	2
Other diseases of the Uterus	....	..	..	.	..	1	..	..	1	..	..	..	2
Ovarian Cysts and other Ovarian Tumors	...	..	..	..	..			..	1	..	..	..	1
Other diseases of Female Genital Organs	....	..	1	1	..	..	..	..	..	1	2	1	6
Accidents of Pregnancy	5	..	3	..	1	2	7	5	2	3	2	3	34
Puerperal Septicemia	3	3	2	4	1	..	2	2	2	3	3	4	29
Puerperal Eclampsia	7	1	1	2	1	1	3	1	1	1	1	..	20
Erysipelas	1	1	1	2	1	..	2	..	4	1	.	.	13
Gangrene	2	..	.	2	..	..	1	..	..	4	..	2	11
Phlegmon, Acute Abscess	1	..	1	..	..	..	..	1	..	1	1	..	5
Other diseases of Skin and Adnexa	....	1	..	..	..	..	..	..	..	..	.	..	1
Chronic or Cold Abscess	....	..	..	..	..	..	1	..	..	..	..	..	1
Other diseases of the Organs of Locomotion	1	1	.	1	1	1	..	..		..	.	..	5
Malformations	1	5	2	2	..	2	3	1	2	2	1	1	22
Congenital Debility	7	5	6	5	5	4	5	5	8	[illegible]	5	9	67
Want of care	2	1	2	1	..	1	..	..	..	..	1	..	8
Other diseases of Infancy	3	10	4	10	5	2	2	4	7	2	3	2	54
Senile Debility	20	12	17	18	13	12	23	12	26	21	17	24	216
Suicide	1	4	..	1	4	1	..	1	1	6	2	1	23
Accidents	27	24	25	20	21	19	20	20	24	12	19	29	266
Homicide	3	3	2	5	2	1	..	1	1	4	..	1	23
Exhaustion, Cachexia, etc	....	..	1	..	1	2	3	4	5	6	9	7	38

TABLE I—*Concluded.*

DISEASES.	1889.						1900.						Totals.
	July.	Aug.	Sept.	Oct	Nov	Dec.	Jan.	Feb.	March.	April.	May.	June.	
Fever, Inflammation, not defined	...	3	3	..	2	..	1	1	..	..	3	..	13
Dropsy, Heart Failure	11	1	2	3	8	4	13	8	14	8	3	10	86
Asphyxia Cyanosis (not congenital)	....	.	..	..	.	..	..	..	2		.	1	3
Sudden Death, (not puerperal)	....	2	1	..	.	..	5	1	5	1	..	5	20
Abdominal Tumors	1	1	..	..	..	..	1	2	..	..	..	1	6
Other Tumors	...	..	.	1	.	..	.	1	..	.	..	.	2
Unknown	46	47	50	31	48	41	51	73	27	8	5	37	650
Stillbirths	4	5	5	7	3	3	2	3	6	6	5	6	55

TABLE II.

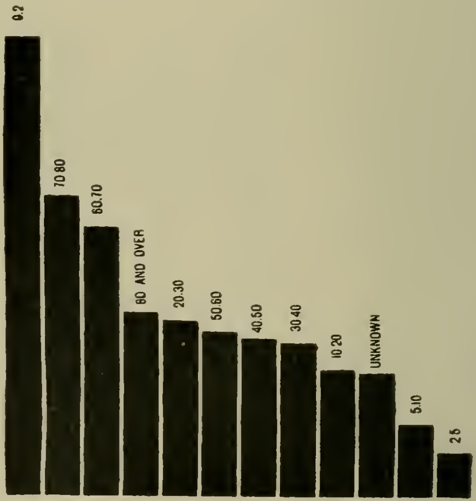
DEATHS BY COUNTIES, SEX AND COLOR, YEAR ENDING JUNE 30, 1900.

	White.	Colored	Male.	Female.	Total.
Allegany	235	14	141	108	249
Anne Arundel	227	136	196	167	363
Baltimore	1136	257	748	645	1393
Calvert	76	62	64	74	138
Caroline	91	23	63	51	114
Carroll	247	21	143	125	268
Cecil	241	35	155	121	276
Charles	14	2	8	8	16
Dorchester	117	37	81	73	154
Frederick	365	95	229	231	460
Garrett	73	3	52	24	76
Harford	204	44	117	131	248
Howard	92	33	55	70	125
Kent	161	74	142	93	235
Montgomery	106	43	64	85	149
Prince George's	99	57	79	77	156
Queen Anne's	99	61	86	74	160
Somerset	158	66	123	101	224
St. Mary's	55	35	53	37	90
Talbot	119	21	82	58	140
Washington	365	54	208	21	419
Wicomico	142	30	92	80	172
Worcester	135	47	89	93	182
Totals	4557	1250	3560	2247	5807

TABLE III.

Deaths for the Year Ending June 30, 1900, by Ages, with Ratios to Total Deaths.

	Deaths	Ratios to total mortality.
Under 2 years	1192	20.5
2 to 5 years........	119	2.04
5 to 10 years.	191	3.28
10 to 20 years.......	330	5.7
20 to 30 years......	463	7.9
30 to 40 years.......	397	6.83
40 to 50 years	407	7.
50 to 60 years.	433	7.11
60 to 70 years.......	696	11.98
70 to 80 years	782	13.46
Over 80 years	484	8.33
Unknown.........	316	5.26



DIBGRAM C.

Deaths by ages for the year ending June 30, 1900.

TABLE IV.

Deaths from Communicable Diseases between July 1, 1899 and June 30, 1900, in Order of their Numerical Importance, and Showing also their Ratio to Total Mortality.

Diseases.	Deaths.	Ratio to Total Mortality.
Tuberculosis	663	11.4
Pneumonia.	406	7.
Infantile Diarrhœa	354	6.11
Typhoid Fever	218	3.75
Diphtheria	171	2.94
Influenza	142	2.44
Meningitis	94	1.61
Whooping Cough	57	.98
Dysentery	52	.9
Measles	43	.74
Diarrhœa and Enteritis	35	.6
Puerperal Septicemia	29	.5
Pyemia and Septicemia.	17	.29
Tetanus	12	.2
Scarlet Fever	7	.12

Deaths from Preventable Diseases. 2,300

Ratio to Total Mortality, 39.6 per cent.

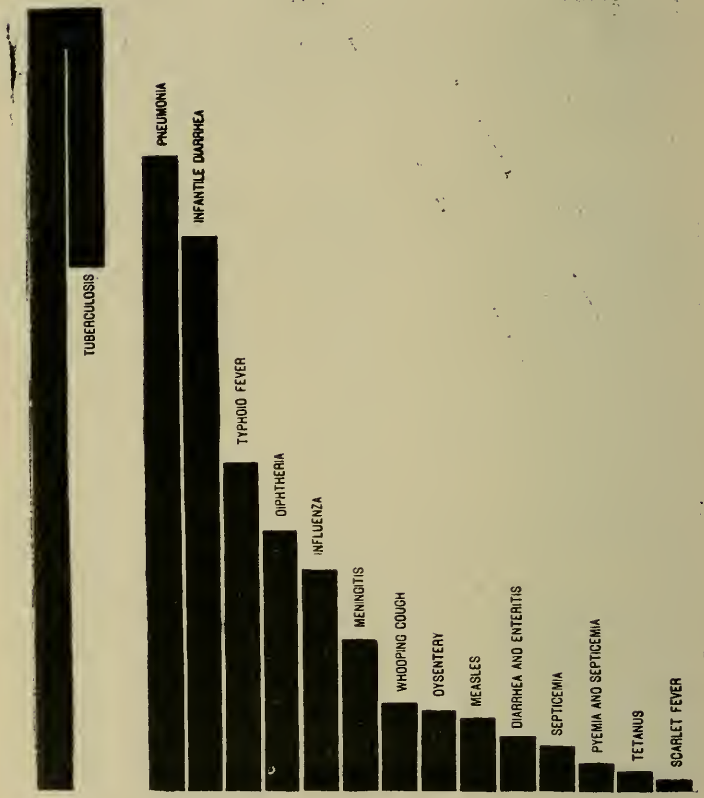


DIAGRAM D.

Deaths from communicable diseases for the year ending June 30, 1900, in the order of their numerical importance.

SOME STATISTICS FOR 1900.

The failure of the Legislature at the session of 1900 to appropriate sufficient money to pay for printing the report of the State Board of Health delayed the publication of this volume. The delay enables us to give some statistical tables for the year 1900.

The counties whose records for two years past indicate that full returns are being made are but four in number: Baltimore, Calvert, Cecil and Kent, and these represent 144,426 people, among whom 2,299 deaths occurred, a rate of 15.23 per thousand. The counties whose returns for the last six months of 1900 entitle their general results to be admitted into the statistics are, in addition to the four named, Anne Arundel, Dorchester, Frederick, Harford, Howard, Queen Anne's, Talbot, Washington, Worcester, and these counties include an aggregate population of 269,588. The thirteen counties named have an aggregate population of 414,014, and there were 5,519 deaths, a rate of 13.33 per thousand. The ten remaining counties, representing 267,079 people, would, if their returns should be admitted to the estimates for 1900, introduce large sources of error. Thus it would appear that there were in these ten counties 1,829 deaths among 267,079 people, a rate of 6.84 per thousand.

It is highly probable that these counties which do not keep strict account of deaths are considerably heavier losers than the counties where registration is good. Of these ten counties three will probably improve far enough to get into the account of 1901—Allegany, Carroll and Prince George's; three may overtake the procession in 1902—Garrett, Caroline and Montgomery; four are not at present within hailing distance—Charles, St. Mary's, Somerset and Wicomico.

TABLE V.

DEATHS FROM ALL CAUSES BY MONTHS AND COUNTIES FOR THE YEAR ENDING DECEMBER 31, 1900.

COUNTIES	Jan.	Feb.	March	April	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.	Total.
Allegany	20	10	14	24	31	29	37	35	60	36	49	44	389
Anne Arundel..	38	25	32	34	23	54	57	43	39	43	43	39	470
Baltimore	113	132	148	142	93	98	176	175	114	107	95	91	1484
Calvert........	12	11	18	17	11	1	17	18	14	12	9	5	145
Caroline.	11	3	10	14	12	9	5	12	14	11	1	..	102
Carroll.........	29	20	15	29	21	15	18	40	34	20	20	17	278
Cecil	37	23	31	39	20	12	46	47	23	43	23	27	371
Charles	.	1	1	1	1	3	.	..	5	6	12	9	39
Dorchester... .	9	6	22	14	13	15	40	28	42	33	24	37	283
Frederick.......	40	47	36	57	36	30	63	78	69	65	71	56	648
Garrett	4	9	9	11	8	10	13	11	7	7	8	8	105
Harford	15	22	34	26	23	14	33	59	38	35	29	19	347
Howard..	18	19	31	16	20	10	20	18	22	19	20	15	228
Kent	32	23	23	25	15	17	21	35	32	27	29	20	299
Montgomery ...	18	14	12	11	8	13	33	38	22	29	22	21	241
Prince George's.	1	10	10	7	10	21	33	35	36	37	26	21	247
Queen Anne's..	17	19	15	13	16	14	31	35	26	21	23	7	237
Somerset	19	14	23	17	27	16	12	18	12	9	..	..	167
St. Mary's......	8	15	11	3	20	6	11	7	4	3	3	3	94
Talbot.	14	19	19	22	10	8	24	29	19	32	25	18	239
Washington .. .	18	37	52	34	33	41	67	84	43	73	48	41	571
Wicomico	18	18	27	17	23	8	24	7	2	.	9	14	167
Worcester.. ...	19	14	10	18	15	23	27	38	32	39	27	16	278
	510	511	601	591	489	467	808	870	709	711	616	52·	7429

TABLE VI.

Death Rate per Thousand Population (Census of 1900) by Counties, for the Periods July 1, 1898, to June 30, 1900, and from January 1, 1900, to December 31, 1900.

Counties.	Population.	July, 1899, to June, 1900, Mortality per 1,000.	Jan. to Dec. 1900, Mortality per 1,000.
Allegany	53,694	4.62	7.2
Anne Arundel	39,620	9.1	11.86
Baltimore	90,755	15.23	16.3
Calvert	10,223	13.5	14.1
Caroline	16,248	7.01	6.21
Carroll	33,860	7.91	8.2
Cecil	24,662	11.1	15.1
Charles	17,662	0.88	2.77
Dorchester	27,962	5.01	10.4
Frederick	51,920	8.86	12.4
Garrett	17,701	4.29	5.8
Harford	28,269	8.77	12.2
Howard	16,715	7.48	10.3
Kent	18,786	12.5	15.7
Montgomery	30,451	4.89	7.5
Prince George's	29,898	5.55	8.5
Queen Anne's	18,364	8.71	12.8
Somerset	25,923	8.63	Dead men tell no tales.
St. Mary's	17,182	5.00	5.47
Talbot	20,342	6.88	11.7
Washington	45,133	9.28	12.6
Wicomico	22,852	7.52	8.7
Worcester	20,865	8.72	13.3

TABLE VII.

DEATHS FROM CERTAIN CHIEF CAUSES OF MORTALITY REPORTED BETWEEN JULY 1, 1889 AND JUNE 30, 1900, COMPARED WITH THE DEATHS RETURNED FROM THE SAME CAUSES BETWEEN JANUARY 1, 1900 AND DECEMBER 31, 1900, SHOWING IN PART THE INFLUENCE OF THE BURIAL PERMIT LAW WHICH WAS IN OPERATION ONLY DURING THE LAST SIX MONTHS OF 1900.

Deaths from all causes July 1, 1899 to June 30, 1900, . 5,807
" " " Jan. 1, 1900 to Dec. 31, 1900, . 7,429

TYPHOID FEVER.

July 1, 1899 to June 30, 1900—218÷5807=3.8 per cent. of total mortality.

January 1, 1900 to December 31, 1900—337÷7429=4.5 per cent. of total mortality.

INFANTILE DIARRHEA.

July 1, 1899 to June 30, 1900—354÷5807=6.09 per cent. of total mortality.

January 1, 1900 to December 31, 1900—759÷7429=10.2 per cent of total mortality.

TUBERCULOSIS.

July 1, 1899 to June 30, 1900—663÷5807=11.4 per cent. of total mortality.

January 1, 1900 to December 31, 1900—943÷7429=12.7 per cent. of total mortality.

CANCER.

July 1, 1899 to June 30, 1900—118÷5807=2.03 per cent. of total mortality.

January 1, 1900 to December 31, 1900—164÷7429=2.2 per cent. of total mortality.

PNEUMONIA.

July 1, 1899 to June 30, 1900—406÷5807=7 per cent. of total mortality.

January 1, 1900 to December 31, 1900—436÷29=5.9 per cent. of total mortality.

INFLUENZA.

July 1, 1899 to June 30, 1900—142÷5807=2.44 per cent. of total mortality.

January 1, 1900 to December 31, 1900—157÷7429=2.1 per cent. of total mortality.

BRIGHT'S DISEASE.

July 1, 1899 to June 30, 1900—201÷5807=3.5 per cent. of total mortality.

January 1, 1900 to December 31, 1900—243÷7429=3.3 per cent. of total mortality.

ORGANIC HEART DISEASE.

July 1, 1899 to June 30, 1900—282÷5807=4.86 per cent. of total mortality.

January 1, 1900 to December 31, 1900—331÷7429=4 5 per cent. of total mortality.

UNKNOWN CAUSES.

July 1, 1899 to June 30, 1900—650÷5807=11.2 per cent. of total mortality.

January 1, 1900 to December 31, 1900—652÷7429=8.77 per cent. of total mortality.

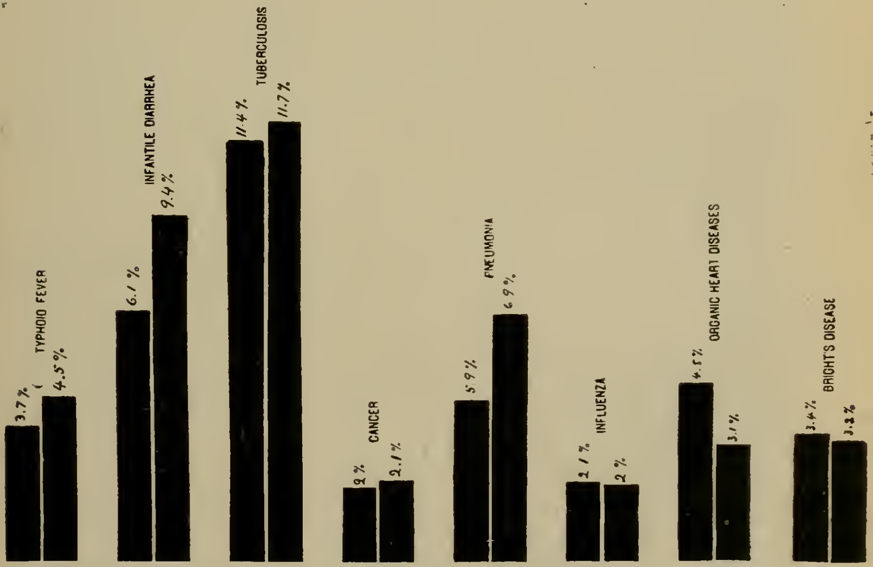


DIAGRAM E.

Certain important causes of death, comparing the mortality ratios for the year ending June 30, 1900, (the first of each two columns), with the morality ratios for the year ending December 31, 1900, (the second of each two columns.) Burial permits from July 1, 1900.

The following table shows a total mortality of 7,692, an excess of 263 deaths over the figures shown in the preceding tables for the year ending December 31, 1900. The detailed table which follows included 263 delayed returns of deaths which came in after the former tables were made. Since the correction of the former tables would have involved the distribution of the 263 deaths according to age, color, month, county and cause, entailing tedious re-enumeration and repeated calculation, without materially altering the percentage figures, it was thought best to print those tables as originally made:

TABLE VIII.

Deaths for the Year Ending December 31, 1900, by Months and by Causes

Disease.	Jan.	Feb.	March.	April.	May.	June.	July.	Aug.	Sept.	Oct.	Nov.	Dec.	Totals.
Typhoid Fever	11	10	7	3	12	6	34	65	59	54	40	36	337
Fever, Intermittent	1	1	...	...	3	...	6	3	7	10	7	2	40
Malarial Cachexia	...	...	...	1	...	1	...	...	1	...	1	...	4
Measles	1	6	7	9	7	8	1	1	...	4	6	3	53
Scarlatina	1	...	3	...	...	...	1	1	...	5	3	1	15
Whooping Cough	9	1	4	8	3	3	3	2	3	4	4	3	47
Diphtheria	19	15	18	10	9	3	3	6	16	30	33	14	176
Grippe	20	10	18	35	30	11	4	5	1	3	6	14	157
Cholera Nostras	...	1	...	...	...	...	9	5	5	...	1	1	22
Dysentery	...	...	2	...	...	13	16	18	8	7	1	1	66
Erysipelas	2	...	4	1	...	...	...	1	...	...	2	2	12
Other Epidemic Affections	...	...	...	...	...	...	...	1	...	...	...	...	1
Purulent Infection and Septicaemia	1	2	...	2	1	2	3	...	1	2	1	2	17
German Measles	...	...	...	2	...	1	...	...	...	...	...	...	3
Tuberculosis	68	57	70	57	59	49	82	82	109	111	83	116	943
Scurvy	...	...	...	1	...	...	...	...	...	...	...	...	1
Scrofula	1	...	1	...	...	...	...	1	1	...	...	1	5
Syphilis	1	3	1	2	1	1	3	2	3	1	1	1	20
Cancer	4	17	10	9	7	8	30	19	12	16	19	13	164
Rheumatism	2	4	4	4	6	1	2	4	3	5	4	4	43
Chronic Rheumatism & Gout	...	...	...	...	...	...	4	1	...	2	...	2	9
Diabetis	1	2	2	1	6	2	2	7	4	1	5	2	35
Addison's Disease	...	...	...	...	...	...	...	1	...	...	...	...	1
Leukemia	...	...	1	...	...	1	1	...	...	...	1	1	5
Anaemia Chlorosis	...	...	...	2	1	1	2	2	1	1	1	...	11
Other General Diseases	...	1	...	...	...	...	...	3	...	...	...	...	4
Alcoholism	1	1	4	6	3	3	2	3	3	2	5	6	39
Other Chronic Poisonings	...	...	...	...	...	...	...	2	...	...	1	...	3
Encephalitis	1	...	...	...	...	...	...	1	...	...	...	...	2
Meningitis	9	9	15	7	7	10	15	10	10	8	6	7	113
Locomotor Ataxia	...	...	...	...	...	...	...	2	...	...	...	...	2
Other Diseases of Spinal Cord	...	...	...	...	...	...	2	...	...	...	...	...	2
Cerebral Softening and Hemorrhage	6	2	1	1	1	3	30	30	14	19	20	33	160
Cerebral Softening	...	...	...	...	...	...	3	2	3	5	2	1	16
Paralysis, without Cause	10	16	20	25	18	19	12	11	24	10	22	13	200
Paralysis, General	...	...	...	...	...	...	2	3	2	1	...	5	13

TABLE VIII—*Continued.*

Disease.	Jan.	Feb.	March.	April.	May.	June.	July.	Aug.	Sept.	Oct.	Nov.	Dec.	Totals.
General Paralysis of Insane..	6	4	2	1	...	4	...	...	...	...	...	...	17
Other Forms of Mental Alienations....	5	10	9	8	6	6	17	6	9	3	10	9	98
Epilepsy	4	...	2	1	1	4	4	2	2	2	3	2	26
Convulsions (not Puerperal)..	2	1	...	...	1	...	...	...	...	...	...	...	4
Eclampsia (non-Puerperal)...	...	...	...	...	...	...	...	...	...	...	1	1	2
Convulsions of Children. ...	8	4	10	9	11	2	15	12	15	11	10	16	123
Tetanus....	...	...	4	...	...	2	5	7	2	...	3	3	26
Other Diseases of Nervous System.	5	...	8	5	7	5	7	3	1	7	4	2	54
Pericarditis....	2	...	...	2	...	...	1	...	...	...	...	...	5
Endocarditis	1	1	1	1	1	...	2	...	...	...	1	1	9
Organic Heart Disease.	21	16	22	31	29	15	26	27	23	34	42	45	331
Angina Pectoris....	2	1	...	2	1	1	1	...	...	2	...	1	11
Diseases of the Ear....	...	...	...	...	...	...	...	...	...	1	...	...	1
Phlebitis, Diseases of the Veins	...	...	...	...	...	...	1	...	...	...	...	...	1
Diseases of the Arteries	3	8	3	2	3	4	...	3	6	4	...	3	39
Embolism and Thrombosis...	...	...	...	...	...	...	...	...	2	...	...	1	3
Affections of the Lymphatic System....	...	...	...	...	...	...	1	...	...	...	...	...	1
Hemorrhages	...	1	...	...	...	...	1	...	1	...	3	1	7
Other affections of the Circulatory System....	1	3	3	1	2	...	2	1	...	1	2	3	19
Affections of the Larynx....	...	...	...	...	...	...	...	...	1	1	...	...	2
Diseases of the Nasal Fossae.	...	...	...	...	...	1	...	...	...	...	...	...	1
Bronchitis, Acute....	4	5	8	3	4	4	...	...	3	3	2	4	40
Bronchitis, Chronic....		1	3	3	3	...	...	...	...	3	2	5	26
Broncho-Pneumonia	7	5	9	7	3	2	1	5	2	1	2	9	53
Pneumonia....	58	62	72	78	39	11	13	6	3	24	23	47	436
Pleurisy....	...	2	1	2	...	...	...	1	...	...	1	1	8
Congestion of the Lungs. ...	...	1	3	3	2	3	4	...	4	...	4	2	26
Gangrene of the Lungs....	...	1	...	...	...	...	1	...	...	...	...	...	2
Asthma and Pulmonary Emphysema	...	1	3	1	1	1	4	1	4	5	5	10	36
Other diseases of Respiratory Apparatus	8	1	3	...	4	1	1	2	2	3	3	3	31
Affections of the Mouth....	...	1	...	1	1	...	1	...	...	1	2	...	7
Affections of the Charynx....	...	...	1	...	...	...	...	...	...	3	...	...	4
Affections of the Esophagus..	...	...	...	...	...	...	1	...	...	1	...	...	2
Ulcer of the Stomach	1	1	1	2	1	...	1	2	2	...	1	...	12
Other Affections of Stomach.	3	6	1	4	3	4	9	10	11	11	8	6	76
Diarrhoea and Enteritis....	7	6	5	7	5	33	199	200	156	81	47	13	759
Diarrhoea and Enteritis over two years....	2	1	2	...	2	2	9	23	14	12	13	10	90
Hernias and Intestinal Obstruction	2	...	1	1	1	3	6	10	5	5	7	3	44
Intestinal Parasites....	...	...	...	...	...	...	...	1	1	...	1	...	3
Other Affections of Intestines.	...	2	1	...	2	1	4	1	1	4	1	5	22
Acute Yellow Atrophy of the Liver....	...	...	...	...	...	...	...	...	...	1	1	...	2
Tumor of the Liver....	...	...	...	...	...	...	...	...	...	...	1	...	1
Cirrhosis of the Liver....	2	5	...	1	3	5	3	3	2	3	1	...	28
Biliary Calculi....	...	...	...	...	...	...	1	...	1	...	...	1	3
Other Affections of the Liver.	2	3	1	4	2	5	10	5	2	5	5	3	47

TABLE VIII—*Concluded.*

DISEASE.	Jan.	Feb.	March.	April.	May.	June.	July.	Aug.	Sept.	Oct.	Nov.	Dec.	Totals.
Peritonitis, Simple (Puerperal excepted)	4	4	3	3	3	2	1	6	2	2	2	3	35
Appendicitis, Abscess of the Iliac Fossa	1	...	...	...	...	...	3	5	2	1	1	2	15
Other diseases of the Digestive System	1	...	...	...	...	1	...	...	...	...	...	...	2
Affections of the Spleen	...	...	...	...	...	...	...	1	...	...	...	...	1
Acute Nephritis	11	4	10	5	3	1	1	2	2	2	8	5	44
Bright's Disease	4	20	13	26	11	25	29	22	22	24	24	13	243
Other diseases of the Kidneys and Adnexa	...	3	1	3	1	1	2	...	4	3	5	2	25
Calculi of the Urinary Tract	...	...	...	...	...	...	...	1	...	...	1	...	2
Diseases of the Bladder	1	1	1	..	1	...	2	1	2	2	1	3	15
Diseases of the Urethra	...	...	...	...	...	...	1	...	...	...	...	...	1
Diseases of the Prostate	1	1	...	1	1	...	...	...	1	3	...	2	10
Hemorrhage, Uterine (non-Puerperal)	...	...	...	...	...	...	...	1	1	...	...	...	2
Tumors, Uterine	...	...	...	1	...	...	...	...	1	...	...	...	2
Cysts and other Tumors of the Ovary	...	1	...	...	...	...	1	...	...	...	...	1	3
Other diseases of the Uterus	...	1	...	...	...	...	...	...	1	...	...	...	2
Other diseases of the Female Genital Organs	...	...	...	1	2	1	...	1	1	1	...	1	8
Accidents of Pregnancy	7	5	2	3	2	3	1	2	...	1	1	...	27
Hemorrhage, Puerperal	...	...	...	...	...	...	...	...	...	...	...	2	2
Other Accidents of Labor	...	...	...	...	...	...	1	1	...	...	...	...	2
Septicaemia, Puerperal	2	2	2	3	3	4	1	4	2	1	3	2	29
Albunimuria and Puerperal Eclampsia	3	1	1	1	1	...	6	...	5	5	1	4	28
Other Puerperal Accidents (Sudden Death)	...	...	...	...	...	...	1	1	...	...	2	1	5
Gangrene	1	...	...	4	...	2	...	1	3	1	1	...	13
Furuncle (Carbuncle)	1	1	...	1	1	...	...	1	...	...	...	1	6
Other diseases of the Skin and its Adnexa	...	...	...	...	...	...	1	2	...	2	1	...	6
Affection of the Bones (non-Tuberculosis)	...	...	...	...	...	...	...	2	1	...	...	2	5
Other Affections of the Organs of Locomotion	...	...	...	...	...	...	1	1	...	...	...	...	2
Amputation	...	...	...	...	...	...	1	...	...	...	...	...	1
Malformation, Congenital	3	1	2	2	1	1	7	6	...	4	5	7	39
Congenital Icterus, Debility and Sclerema	5	5	8	3	5	9	19	18	15	13	5	20	125
Other diseases of Early Infancy	2	4	7	2	3	2	16	18	15	18	8	4	99
Lack of Care	...	...	...	...	1	...	...	1	...	...	...	1	3
Senile Debility	23	12	26	21	17	24	34	51	25	47	31	23	334
Suicide	...	1	1	6	2	1	1	...	3	3	...	2	20
Accidents	20	20	24	12	19	29	49	40	44	39	39	28	363
Dropsy	13	8	14	8	3	10	4	10	9	4	10	2	95
Asphyxia	...	...	2	...	...	1	...	...	...	...	...	...	3
Sudden Death	5	1	5	1	...	5	1	3	1	...	1	1	24
Tumors	1	3	...	...	...	1	...	...	...	...	...	...	5
Unspecified or Ill-Defined Causes of Death	55	78	82	78	68	37	69	50	40	43	23	29	652
Still-Births	2	3	6	6	5	6	17	13	13	16	9	9	105
	494	493	582	557	465	431	893	890	781	768	664	674	7692

RETURNS OF BIRTHS.

The effort to obtain full and complete returns of death has for the present diverted us from the somewhat less urgent work of gathering complete statistics of birth. The interest of the State in her yearly increment of human capital is apparent chiefly in the birth rate, and if we were guided by the apparent birth rate we would find a very discouraging condition, the reported deaths so far outnumber the reported births.

The text of the law provides as fully as need be for the registration of births in all respects, except that it requires births to be reported directly to the county registrar. If birth certificates were collected by the local sub-registrars as death certificates are collected, and were returned monthly, the returns would be largely increased. The smaller area would be more completely worked by the sub-registrar. This would, however, increase somewhat the cost of collection. That the slightly increased cost would be no bar to the general employment of the small area method, is shown by the fact that a few counties—Worcester, Howard and Prince George's—have chosen to register births in this manner. The additional cost amounts to ten cents for each record. It will be but a short time before popular education on this subject will have advanced so far as to demand accuracy and completeness in registration of births. The private interest in correct official records of birth is greater than that in records of death.

At present a full half of all the returns are made before children are named, and when the attention of parents is called to the omission of this chief item of record, public sentiment will demand that the records shall be made in all respects complete. The State Board of Health will make special inquiry of parents in all cases where the name of the child does not appear in the record, and ask that the defect be repaired. By this proceeding we shall undoubtedly increase popular interest in the registration of births.

There were returned in 1900 birth certificates to the number of 6,855, as against death certificates to the number of 7,692.

John S. Fulton,
State Registrar.

LIST OF SUB-REGISTRARS.

ANNE ARUNDEL COUNTY.

First district—Dr. John Collinson, South River P. O.
Dr. S. S. Hepburn, West River.

Second district—Dr. Wm. H. Williams, Conaways.
Dr. Thos. Welch, Rutland.

Third district—Dr. Geo. Crane, Armiger.
Dr. H. M. Revell, Asbury.

Fourth district—Dr. J. W. DuBois, Gambrills.
Dr. Lacy Brayshaw, Jessups.

Fifth district—Dr. J B. Robinson, Brooklyn.
Dr. C. R. Winterson, Elkridge.

Annapolis—Dr. W. C. Claude, Annapolis.
Dr. T. B. Horton, Curtis Bay.
Dr. Frank H. Thompson, Annapolis.

Eighth district—Dr. Geo. W. Pembroke, Friendship.
Dr. A. Perry, McKendree.

BALTIMORE COUNTY

Andrew Gibson, Fork,
A. W, Perrie, J. P., Towson,
Edward Hawkins, J. P., Parkton,
Dr. Chas. L Mattfeldt, Catonsville,
Dr. J. C. Schofield, Highlandtown,
Dr. Frank H. Ruhl, Mt. Winans,
Dr. J. S. Woodward, Sparrow's Pt.,
John C. Duncan, Cockeysville,
Henry Davis, Pikesville,
Stephen Putney, Granite,
Chas. Brockmeyer, Fullerton,
Jos. L. Baldwin, Eklo,
John F. Hessie,J. P.,Monkton,
John M. Bone, Bonemma,
A. V. Chalk, Mt. Washington,
Mr. Orrick, J. P., Glyndon.

CALVERT COUNTY.

Dr. Geo. F. Chambers, Bertha,
Dr. Abram J. Williams, Barstow,
Dr. Philip Briscoe, Mutual,
W. B. Stafford, J. P., Bowens,
Thos. H. King, J. P., Huntingtown,
J. M. B. Dalrymple J. P., Lower Marlboro.

LIST OF SUB-REGISTRARS—Continued.

CAROLINE COUNTY.

First district—Dr. J. E. Golley, Templeville.
J. S. Lapham, Goldsboro.

Second district—Dr. Geo. W. Betson, Greensboro.

Third district—Dr. Theo. Saulsbury, Burrsville.
Dr. S. P. Manship, Denton.

Fourth district—C. B. Harrison, Preston.
John Spruce, Choptank.

Fifth district—Dr. R. K. Jefferson, Federalsburg.
Harry Kinder, Federalsburg.

Sixth district—Gra. Ford, Jr., Hillsboro.

Seventh district—J. K. Hannaberry, Ridgely.

Eighth district—Dr. John DuHadaway, Fowling Creek.

CARROLL COUNTY.

Ralph S. Barnes, Sykesville,
Michael Glennan, Daniel,
Jacob Lippy, Silver Run,
Frank I. Lewis, Mt. Airy,
William Moore, Westminster,
Jacob Farver, Winfield,
Jesse F. Billmyer, Uniontown,
Jacob P. Baltozer, Manchester,
Saml. I. Hoffacker, Alesia,
Norman B. Hagan, Taneytown,
Henry T. Williams, Taneytown,
Wm. J. Crabbs, Union Bridge,
Andrew J. Houck, Hampstead,
Lewis Dielman, New Windsor,
D. Calvin Warner, Double Pipe Ck.,
Marion J. Leister, Finksburg.

CECIL COUNTY.

Geo. S. Harwood, J. P., Port Deposit.
Dr. L. R. Kirk, Rising Sun.
Thomas B. Cranmer, J. P., North East.
Wm. A. Alexander, Chesapeake City.
John H. Black, Cecilton.

CHARLES COUNTY.

First district—John G. Robertson, La Plata.

Second district—Wm. L. Brawner, McConchie.
Chas. D. Carpenter, Pisgah.

Third district—Maxmillan Clements, Ironside.

Fourth district—W. S. Gates, Wicomico.
Peter W. Robey, Bel Alton.

Fifth district—W. R. Clarke, Newberg.
I. R. Perry, Harris Lot.

Sixth district—Wm. L. Hicks, Waldorf.

Seventh district—Andrew L. McDaniel, Pomonkey.
Richard H. Dement, Indian Head.

Eighth district—Robt. L. Murphy, Bryantown.

Ninth district—Dr. Harry C. Chappelear, Hughesville.

LIST OF SUB-REGISTRARS—Continued.

DORCHESTER COUNTY.

First district—Dr. E. R. Osler, Galestown.
Dr. Moore, Eldorado.
Second district—Dr. Geo. P. Jones, East Newmarket.
W. J. Abdel, J. P., East Newmarket.
Third district—Dr. R. J. Price, Vienna.
Dr. S. S. Ewell, Vienna.
Fourth district—T. W. Stapleforte, J. P., Taylor's Island.
Fifth district—Dr. E. A. P. Jones, Crapo.
H. S. Phillips, J. P., Crapo.
Sixth district—Dr. W. J. Henry, Fishing Creek.
L. P. Ashton, J. P., Fishing Creek.
Seventh district—Dr. John Mace, Cambridge.
Dr. B. W. Goldsborough, Cambridge.
Eighth district—Dr. S. A. Stokes, Cornersville.
Dan. L. Moore, Cornersville.
Ninth district—Dr. R. L. Linthicum, Church Creek.
Victor Carroll, Church Creek.
Tenth district—Dr. J. A. Conway, Wingates.
Dr. J. W. Steves, Holland's Island.
Eleventh district—S. A. Lawson, Bespitch.
Twelfth district—Enoch Lowe, J. P., Williamsburg.
Thirteenth district—Wm. Fox, Aireys.
S. M. Smith, Aireys.
Fourteenth district—Dr. A. S. Sayers, Linkwood.
Mr. Gulick, Postmaster, Gluckheim.
Fifteenth district—Dr. G. N. Haefner, Hurlock.
Dr. H. F. Nichols Hurlock.
Sixteenth district—Dr. B. L. Smith, Madison.
W. H. P. Bryan, J. P., Madison.

FREDERICK COUNTY.

Thos. Greenwell, Urbana,
Bradley T. Nicodemus, Unionville,
Amos Thomas, Adamstown,
Jeringham Boone, Buckeytown,
C. Lemuel Shifler, Middletown,
Thos. Wiles, Middletown,
Henry Stokes, Emmitsburg,
Alvin E. Sensenbaugh, Wolfsville,
John W. Hoover, Wolfsville,
Francis A. Kessler, Hopeland,
Francis E. Swadener, Libertytown,
H. Clayton Trundle, Libertytown,
Geo. M. Smith, New Market,
John E. King, Kemptown,
Calvin T. Fox, Foxville,
Geo. M. Shaw, Woodsboro,
Solomon V. Blessing, Petersville,
John L. Jordan, Brunswick,
John H. Witter, Walkersville,
Ralph E. Culler, Jefferson,
John Jones, Thurmont,
Joseph A. Gernand, Graceham,
Saml. P. Brandenburg, Harmony,
John W. Grinder, Creagerstown,
Jas. A. Koons, Ladiesburg,
Christopher Baker, Lewiston,
Francis M. Harley, Yellow Spgs.
Henry M. Wiener, Burkittsville,
Calvin N. Stem, Sabillasville.

LIST OF SUB-REGISTRARS—Continued.

Harford County.

First district—C. C. Cronne, Sewell P. O.
Chas. E. Creswell, Clayton.
Second district—Jas. W. Malcolm, Perryman's.
Henry Earle, Earleton.
Third District—Jas. A. Lyle, Belair.
F. P. Smithson, M. D., Forest Hill.
Fourth district—Thos. Johnson, Upper Cross Roads.
W. M. Barton, Faron Grove, Pa.
Fifth district—John O. Stearns, Cambria.
Wm. Jordan, Dublin.

Howard County.

First district—John Resau, Elkridge.
Robert Cavy, Ilchester.
Second district—Howard Dunkel, Ellicott City.
John W. Streaker, Alberton.
Third district—David Donavin, Woodstock.
Thos. J. Cross, W. Friendship.
Fourth district—Chas. Pickett, Poplar Springs.
Wm. Mathews, Glenwood.
Fifth district—Dr. George Nichols, Dayton.
Chas. Wilson, Simpsonville.
Sixth district—Dr. Thos. Linthicum, Savage.
Wm. Phipps, Oakland.

Kent County.

George W. Jacobs, J. P., Galena.
George C. Townsend, J. P., Millington,
Jos. C. Rasin, J. P., Still Pond.
WIllard Melvin, J. P., Chestertown.
C. N. Satterfield, J. P., Rock Hall.

Montgomery County.

Dr. E. C. Etchison, Gaithersburg.
Dr. J. R. Simpers, Germantown.
Dr. W. A. Waters, Germantown.
Dr. J. H. Stonestreet, Barnesville.
Dr. J. E. Deetz, Clarksburg.
Dr. B. Frank Lansdale, Damascus.
Dr. R. T. Gott, Poolesville.
Dr. J. S. Poole, Dawsonville.
Dr. C. H. Nourse, Barnestown.
Dr. William L. Lewis, Kensington.
Dr. J. L. Lewis, Bethesda.
Dr. Richard Batson, Spencerville.
Dr. Wm. T. Brown, Burnt Mills.
Mr. L. D. Waters, Silver Spring.
Dr. W. T. Pratt, Potomac.

LIST OF SUB-REGISTRARS—Continued.

PRINCE GEORGE'S COUNTY.

First—Vansville District—Mr. S. D. Hall, Beltsville P. O.
Second—Bladensburg—G. M. Suit, Hyattsville.
Third—Marlboro District—Ernest Smith, Marlboro P. O.
Fourth—Nottingham—Robert McKee, Nottingham.
Fifth—Piscataway—Dr. Harry Nalley, Piscataway,
Sixth—Spaldings—S. E Cox, Suitland.
Seventh—Queen Anne's—Walter Ryon, Collingly.
Eighth—Jos. S. Fowler, Aquasco.
Ninth—Surratts—Dr. John L. Waring, Clinton.
Eleventh—Brandywine—W. H. Squires, Brandywine.
Twelfth—Oxen Hill—R. F. Graimes, Oxen Hill.
Thirteenth—Kent—B. D. Scott. Brightseat.
Fourteenth—Bowie—Dr. N. A. Ryon, Bowie.
Sixteenth—Hyattsville—E. M. Smith, Hyattsville.

QUEEN ANNE'S COUNTY.

Fred. Stack, Ruthsburg,
J. C. Hacket, Sudlersville,
B. F. Hartley, Crumpton,
J. E. Bryan, Kent Island,
R. H. Phillips, Barclay,
C. E. Smith, Church Hill,
B. Emory, Jr., Centreville,
J. M. Aker, Queenstown.

ST. MARY'S COUNTY.

Dr. Louis Tippett, St. Inigoes,
Dr. Jos. King, Hollywood,
Dr. T. H. Lynch, Valley Lee,
Dr. W. B. Dent, Oakley,
Dr. Z. R. Morgan, Mechanicsville.

TALBOT COUNTY.

John B. Fairbank, Easton,
John Sullivan, Trappe,
Alga Smith, Cordova,
Thos. E. Burns, St. Michael's,
Mr. Harrison, Oxford,
Jos. G. Skinner, McDaniel,
Wm. J. Jackson, Tilghman.

WASHINGTON COUNTY.

Van. S. Brashears, Sharpsburg,
A. C. Gruber, Williamsport,
T. Belt Johnson, Clearspring,
Chas. H. Satton, Hancock,
Danl. G. Krouse, Cavetown,
J. H. Ferguson, Smithsburg,
B. G. Sheiss, Leitersburg,
Preston E. Miller, Keeptryst,
Henry Shirk, Indian Spring,
John Clarke, Beaver Creek,
Joshua C. Hine, Keedysville,
Josiah Hill, Sharpsburg,
Jas. E. Hawken, Williamsport,
James M. Little, Clearspring,
Joseph Harrison, Hancock,
O. Jesse Stollemeyer, Boonsboro,
Eugene A. Brown, Brownsville,
M. Z. Miller, Funkstown,
Henry C. Miller, Fairplay,
John H. Baughman, Maugansville,
John Myers,Green Spring Furnace.
A. M. Scott, Downsville,
John B. Huyette, Conococheague.

LIST OF SUB-REGISTRARS—Concluded.

Wicomico County.

First district—W. H. Bailey, Hebron.
Second district—John Bethards, Hebron.
Third district—Minus Downing, White Haven.
Fourth district—James Truitt, Pittsville.
Weslet Truitt, Willards.
Fifth district—W. A. Trader, Salisbury.
Sixth district—Silas Dennis, Willards.
Seventh district—Isaac Messick, Fruitland.
Eighth district—D. J. Staton, Salisbury.
Ninth district—Thomas Turpin, Salisbury.
Tenth district—W. C. Mann, Sharptown.
Eleventh district—S. E. Foskey, Delmar, Del.
Twelfth district—John Phillips, Capitola.

Worcester County.

Daniel A. Maccoy, Berlin.
Alfred Whittington Pocomoke City.
John B. Richards, Newark.
Thos. Corbin, Corbin's P. O.
W. O. Payne, Stockton.
Wm. J. Rounds, Snow Hill.
Ora Carr, Goodwill.
Samuel H. Tilghman, Whiton.
Jas. H. Mumford, Ocean City.
Chas. Davis, Bishop Switch P. O.
Wm. Whaley, Bishopville.

Reports of Local Boards of Health.

COUNTY AND TOWN BOARDS.

ALLEGANY COUNTY.

January 1, 1901.

Dr. John S. Fulton, *Secretary State Board of Health.*

Dear Sir: I herewith have the honor to make my report for the year of 1900.

I find that there have been reported to me 271 births (not so many as last year), and 237 deaths (a very much larger percentage than the previous year), showing that the births are not being reported, while the deaths must be. In order to get a full report of the births something more must be done.

The following contagious diseases were reported:

Near Barton—Scarlet fever, 6; typhoid fever, 5; measles, 1; cerebro-spinal-meningitis, 1; (death in 36 hours).

Near Ellerslie—Typhoid fever, 4.

Near Lonaconing—Typhoid fever, 19, with one death; scarlet fever, 11.

Near Mount Savage—Scarlet fever, 2; diphtheria, 3; typhoid fever, 1.

On December 3d a case of small-pox was discovered in a large camp of colored laborers near Pinto, this county. The case was immediately isolated, and all others that had been in close contact with him were quarantined, under guard. Since which time six of his companions, under surveillance, have come down with the disease. All at this writing are doing well and no fatal issue expected. We have built our own pest house, guards' quarters, and have a good-sized house rented as place of detention, all of which are in proximity and far away from the other shanties. We have every reason to believe that we can hold the disease in check and confine it to the few who were identified with the original case. I might add that the cases all seem to be of a mild type, and that none of them had been vaccinated.

Respectfully,

C. H. Brace, M. D.,
Cumberland, Md. *Health Officer.*

CUMBERLAND.

December 22, 1900.

Dr. John S. Fulton, *Secretary State Board of Health.*

Dear Sir: I have the honor to herewith transmit you a few notes on things pertaining to the Health Department in the city of Cumberland.

For the six months closing November 30, 1900, there were 238 births and 144 deaths reported. In the first quarter I did not get complete returns, but in the last quarter I think they are quite complete, especially the death reports. The cause of the deaths reported and the number of each are as follows:

General Diseases.

I. Epidemic Diseases--Typhoid fever, 3; pertussis, 2; diphtheria, 0; croup, 1—6.

II. Other General Diseases—Alcoholism, 2; septicæmia, 1; tuberculosis, 18; cancer, 3; rheumatism, 3; anaemia, 1; tetanus, 1; poisoning (2 homicidal, 1 accidental), 3—31.

Local Diseases.

III. Diseases of the Nervous System—Meningitis, 5; paralysis, 2; epilepsy, 1—8.

IV. Diseases of the Circulatory System—Embolism, 1; organic disease of heart, 7; hemorrhage, 1—9.

V. Diseases of Respiratory System—Pneumonia, 5; pyothorax, 1—6.

VI. Diseases of the Digestive System—Gastro-enteritis, 1; indigestion, 3; acute gastritis, 1; cholera infantum, 16; diarrhœa and enteritis, 2; dysentery, 4; intest. obstruction, 1; cirrhosis of liver, 2; biliary calculi, 3; peritonitis, 1; appendicitis, 2—36.

VII. Diseases of Genito Urinary System—Acute nephrites, 4; Bright's disease, 1; cystilis, 1—6.

VIII. Puerperal Diseases—Abortion, 2.

IX. Diseases of Infancy—Marasmus—inanition, 5; still born, 6—11.

X. Diseases of Old Age—Senile debility, 4.

XI. Accidents—Drowning, 1; railroad and other injuries, 21—22.

XII. Causes Ill-defined—Exhaustion, 2; syncope, 1—3.

Total, 144.

Our estimated population is 20,000. The returns of infectious diseases are so incomplete, it would be worse than useless to mention them in this report. We had eight cases of small-pox. For further information concerning those cases I will refer you to my report made some months ago.

Our public water supply, which has been so notoriously bad for a few years, and which has been the means of much litigation and newspaper controversy, is, I am happy to say, now clear, sparkling, odorless and tasteless, and comparatively pure. Taking everything into consideration, we have water far above the average in quality found in other cities.

The physicians have generally availed themselves of the services of the State Bacteriologist to make examinations for them, and very much appreciate such service. It is quite satisfactory.

Yours truly,

J. M. Spear, M. D., *Health Officer.*

FROSTBURG.

December 18, 1900.

J. S. Fulton, M. D., *Secretary State Board of Health.*

Dear Doctor: The Frostburg Board of Health report the following for year ending November 30, 1900:

Infectious Diseases reported—Measles, 50; diphtheria, 10; typhoid, 12. We use placards on houses. Deaths, 38. Capiliary bronchitis, 1; meningitis, 2; peritonitis, 1; diabetes mellitus, 1; cancer of stomach, 1; alcoholism, 1; gastritis, 1; puerperal fever, 1; old age, 4; cholera infantum, 6; typhoid fever, 4; infantile convulsions, 3; pneumonia, 6; cerebral hemorrhage, 1; tuberculosis, 3; nephritis, 1; heart disease, 1. The birth returns being incomplete, we have forwarded the same to State Board without making any record.

Very respectfully,

W. O. McLane, M. D., *Health Officer.*

LONACONING.

January 2, 1901.

Dr. John S. Fulton, *Secretary State Board of Health.*

Dear Doctor: I have the honor to present herewith the report of the Lonaconing Board of Health for the past year.

There have been thirty-four cases of typhoid fever reported, and forty cases of scarlet fever. Measles were epidemic in April and May. There were four deaths due to typhoid fever, and none to measles or scarlet fever. There were six deaths due to tuberculosis, or about one-tenth of the death rate was owing to this disease.

Our city has been almost free from typhoid fever for several years, but during the extreme dry weather of the past summer and fall the public water supply became very low, and later failed completely. Then we had to resort to old wells and cisterns to obtain water for drinking and domestic use. We believe this the explanation of our increased number of typhoid cases. That typhoid fever is water-borne was well illustrated here where in one instance fifteen cases developed almost simultaneously in six families using water from the same well.

On December 7, 1899, Dr. M. G. Porter reported a suspected case of small-pox in a colored family. The patient, a young man, had just returned from a round-about tramp, taking in Pittsburg and Wheeling, where the disease prevailed. The house was quarantined and guarded, and the situation wired to the State Board of Health. Dr. Fulton, Secretary of the Board, came promptly and confirmed the diagnosis. Every body living near was personally notified and required to be vaccinated. Although this occurred at the beginning of the holiday trade, when it became known what precautions were taken to prevent the spread, the business of the town continued as usual. After the patient recovered, as soon as the family could be moved, the building, an old log structure, was burned.

Much valuable information has been gained by this Health Board from the samples of water that have been analyzed for us from time to time by the State Board of Health. The George's creek, upon whose banks our town is situated, flows through the center of a deep synclinal valley. The shales or slaty rocks slope upward to the top of Dan's mountain on the east, and to the top of Savage mountain on the west. The coal is some distance from the town, but above us in these shales. Since the coal mining has been carried on extensively, the water, leeching through the disturbed coal seams, has become highly impregnated with sulphuric acid and many deleterious earthy salts. The underflow of water from the mines from either side is toward the town, and the water in all the wells has become excessively hard. When this water is used for drinking, it tends to produce serious diseases of the stomach, kidneys, and bladder. Or again, if we go back to the old diagram of a well forty feet deep being contaminated at the bottom by a nuisance forty feet away, we find that this diagram does not cut any figure in our region. A nuisance may be a quarter of a mile away on the slope above, and its liquid poison come straight down to a well not more than twenty or twenty-five feet deep. In short, the whole underflow of water as found in our wells has become so impregnated with mineral substances from the mines and contaminated by nuisances as to render it entirely unfit for domestic use.

Yours very truly,

JAMES O. BULLOCK, M. D.,
Health Officer.

ANNE ARUNDEL COUNTY.

December 10, 1900.

DR. JOHN S. FULTON, *Secretary State Board of Health.*

DEAR SIR: Under my supervision as registrar from May, 1900, there is nothing to report, more than what the monthly cards have represented, so far as contagious or infectious disease for this county are concerned.

I gave you last Tuesday, the 4th, the expenses of the county from May for general expenses, medical, post-mortem, vaccination, etc.—$439. My actual expenses for nuisance, were burial of two dead horses and visit to Curtis Bay to settle a long time difference about a neighbor's over-flowing closet—all $19.

Our county is in good condition.

Yours very truly,

H. R. WALTON, M. D.,
Health Officer.

Annapolis.

ANNAPOLIS.

December 20, 1900.

Dr. John S. Fulton, *Secretary State Board of Health.*

Dear Doctor: I herewith submit my annual report for the year 1900. A brief mention only can be made of the various items, which, if elaborated, might prove interesting and instructive.

The health of Annapolis has been reasonably good; only 101 deaths reported since the first of January, of which a large number resulted from old age, and many not attributable to any disease, such as still-births.

There have been a few cases of diphtheria and scarlatina; mostly of a mild type.

The collection of vital statistics is now nearly perfect; the registration of births however is still surrounded with difficulty; the majority of midwives, who have charge of such cases among the poorer people, being densely ignorant and careless in such matters, makes the collection of such data extremely difficult.

Twice during the year unfortunate wretches, whose only crime was poverty, were picked up in a dying condition, the result of exposure and want of nourishment and attention, and committed to the county jail—a sad state of affairs, which appeals to the community, and illustrates the need of a free hospital.

The laying of sewers in all sections of our city, and the enactment of ordinances requiring the contents of water closets, foul smelling liquids and all waste waters, to be conveyed into and through them, is a sanitary regulation in the right direction, and will doubtless find its sequel in improved hygiene and excellent health of our citizens.

Yours very truly,

Wm. S. Welch, M. D.,
Health Officer for Annapolis.

BALTIMORE COUNTY.

Dr. John S. Fulton, *Secretary State Board of Health,*

Dear Doctor: The powers of the Health Board of Baltimore County are entirely vested in the Secretary. I do not suppose there is another health officer in the State that has more varied duties than the Secretary to Baltimore County Health Board. The southern part of Baltimore county is a city, that is the people live in compact masses, and to a large extent composed of a foreign element, entirely ignorant of the laws of health, or good sanitary arrangements about their households, consequently they are an easy prey for diphtheria, scarlet fever and typhoid fever. When a case starts in one household it is almost impossible to prevent the spread. The only way would be by strict quarantine, which is not practicable in the rural districts of the county. So you see there are two conditions facing us that are entirely different, and the same law is not practicable for both. Highlandtown, Canton and Sparrow's Point should have special health laws, independent of the rural districts.

There have been three outbreaks of small-pox in Baltimore county since May 1, 1900; two at Sparrow's Point and one at Catonsville. They were quickly put down, the patients affected were sent to Quarantine Hospital, the persons exposed were strictly quarantined, and the entire communities vaccinated.

Diphtheria has existed to some extent, but generally in a mild form, very few deaths resulting therefrom. Mild epidemics have occurred in Canton, Dickeyville, Arlington and Trenton, which have been promptly put down by myself with the courteous assistance of the attending physicians.

Typhoid fever has been quite prevalent in Baltimore county for the past six months. I may say it has existed to such an extent that certain small towns have become very much alarmed for fear that it will become an annual occurrence. The worst outbreaks have been in the southern and southeastern part of the county, in the vicinities of Rossville, Bengies, Chase, Poplar and Middle River. Indeed it has been epidemic in these localities. I visited this section of the county several times and found it a very level country; farms small and generally occupied by German gardeners, with their dwelling-house, stable and hog-pen surrounding the well, which was on an average of 20 to 25 feet deep, and generally on a lower level than the source of pollution. A number of samples of water were sent to Dr. Stokes, Bacteriologist, for examination, and in nearly every case the water was found to be *bad*. It was impossible to convince these people that their well water was unfit to drink, and that it caused typhoid fever, consequently the epidemic continues, but the mortality has been low.

THE FOLLOWING TABLE SHOWS THE NUMBER OF BIRTHS, DEATHS AND INFECTIOUS DISEASES REPORTED.

MONTHS.	Deaths.	Births.	Small-Pox.	Whooping Cough.	Measles.	Scarlet Fever.	Typhoid Fever.	Diphtheria.	Mumps.
April	64	49	......	......	......	....	......	......	......
May	51	57	5	8	30	6	2	20	10
June...	37	84	. ...	5	20	.....	.....	15	3
July	95	100	......	2	4	2	40	10	......
August	158	88	......	......	3	2	35	6	1
September ..	96	72	.....	.....	......	4	62	20	......
October	115	80	......	.....	......	18	51	58	.....
November.....	96	88	......	......	4	15	54	14	.. ...

Yours very truly,

T. ROSS PAYNE, M. D.,
Corbett, Md. *Health Officer for Baltimore County.*

CATONSVILLE.

December 14, 1900.

DR. JOHN S. FULTON, *Secretary State Board of Health.*

DEAR SIR: I herewith submit report of my district for year ending, December 1, 1900. While it is not as complete as I would wish, it is through no fault of mine, as the registration books were removed from my office, and all deaths and births are now registered at the central office at Towson, and hence I can only give you a cursory view of the health of my community.

I have also incorporated in this report the views of several physicians practicing in Catonsville and vicinity, believing that it is advantageous to submit the opinions of those who come in daily contact with the work performed by the local health officer.

I sent a written request to the physicians to give me their views on the health of the community, and received the following replies:

Dr. B. Whitely says: "In answer to your inquiry as to my opinion of the healthfulness of this community this year, I am glad to say that all diseases have yielded to treatment. Catonsville is an exceptionally healthy locality. If it was incorporated and drainage established under your supervision, I think it would compare in healthfulness to any place in the world."

Dr. David M. Stultz writes: "Having been asked my opinion of the general health of Catonsville and vicinity for the past year, will say that it has been better than for any time during the five years previous."

Below I have tabulated the infectious and contagious diseases as they were reported to my office. While I do not consider them thoroughly accurate, still they will give you an idea of what we had to contend with.

INFECTIOUS AND CONTAGIOUS DISEASES REPORTED FROM DECEMBER 1, 1899, TO DECEMBER, 1, 1900.

DISEASE.	Dec.	Jan.	Feb.	March.	April.	May.	June.	July.	Aug.	Sept.	Oct.	Nov.
*Diphtheria........	1	...	..	2	..	....	...	....	....	....	.. .	1
Scarlet Fever.......	...	4	...	..	....	....	...	....	....	...	1	3
Measles...	....	..	24	54	7	...	...	...	..	...	..	...
Varicella..........	...	....	...	2	3	1	....	...	...	...	...	....
†Mumps	....	...	...	21	...	.	..	..	....	....	...	....
Small-pox....	...	..	...	....	....	....	1	....	..	. ..	....	...
Typhoid Fever.. ..	....	...	...	....	....	....	...	3	3	1	..	7

*7 additional cases of Diphtheria reported from Dickeyville during November.
†19 of these cases were in private schools.

The above table will give you the exact number and time when these cases were reported. In glancing over the table one would suppose that we had quite a number of cases to contend with, but when we consider that in this territory there is a population of 5,000, the rate is quite small. The large number of measles cases reported is no doubt due to the fact that they were not properly isolated, which is practically impossible in a rural district.

The excessive number of typhoid fever cases is deplorable, but nevertheless true, and is still due to the presistent practice of using well water contaminated by living well cess-pools. Though I have continually warned residents about this. I have not as yet been able to close all wells so affected, but have succeeded in closing quite a number, and if I shall continue closing wells at the present ratio, in a few years we will only have cases that are imported.

The one case of small-pox reported occurred in June, and was brought from Baltimore. This created quite a little excitement for the time, but being immediately sent to quarantine and a rigid local quarantine kept over those with whom he had come in contact with, and a complete vaccination of those in the neighborhood, we were fortunate enough to suppress it at once. It is due Dr. J. S. Fulton, Secretary of the State Board of Health, and Dr. T. Ross Payne, Secretary of the County Board of Health, who immediately responded to my notification and gave every assistance they could, that I was able to manage this case with such good outcome.

I have abated quite a number of minor nuisances, and have had no difficulty in doing so. I have been fortunate enough to continue sewering the main stream of the town, and hope in a few years to have completed this work.

The attendance at our schools has been above the average since summer, with no sickness reported among the children.

Would advise that the State Board have such laws passed that would give the local officers a little more authority, as under existing local laws one does not know without first consulting an attorney what scope you really possess. I have had a little experience, and know whereof I speak.

Yours very truly,

CHAS. L. MATTFELDT, M. D.,
Health Officer for Catonsville.

LANSDOWNE.

December 19, 1900.

Dr. John S. Fulton, *Secretary State Board of Health.*

Dear Doctor: I respectfully offer the following report of my work as health officer for the Thirteenth District ot Baltimore county for 1900.

Immediately upon receiving notice of appointment (July 1, 1900), I went over the district to examine into its sanitary condition. The villages of St. Denis, Halethorpe and Lansdowne I found comparatively healthy, the drainage well taken care of, with the exception of a few overflowing cess-pools, which were promptly attended to upon receipt of my notice to the owners, and little or no sickness which could be traced to unsanitary conditions. At Mt. Winans things were different. I learned that some of the people there made a practice of cleaning their water closets and disposing of the contents by dumping it in a hole dug in a rear alley or on a vacant lot. I ordered this stopped at once, and have every reason to believe the order has been obeyed. The contents of water closets are now hauled away to a suitable dumping ground. We have had at Mt. Winans nine cases of typhoid fever (five of which were fatal) and five cases of diphtheria (none fatal), which were due, in my opinion, to the existing unsanitary conditions. The residents are willingly co-operating with me in abating nuisances, and the health of the village is undoubtedly improving. The last case of typhoid was in September, and none have since been reported.

On the 18th inst. I was notified of a very sick man on the nursery farm near Halethorpe. I went there at once, and found a well-developed case of small-pox. I immediately quarantined the farm, and notified State and county health officials. The man was removed yesterday; every one on the place and in the immediate vicinity vaccinated, and six persons, who were most intimate with him, placed under close guard. The man came here from Prince George's county a short time since, and in my opinion brought the disease with him. He should never have been allowed to leave the infected district.

Yours very truly,

F. H. Ruhl, M. D.,
Health Officer for Lansdowne.

CALVERT COUNTY.

December 20, 1900.

DR. JOHN S. FULTON, *Secretary State Board of Health.*

DEAR SIR: The healthfulness of the residents of this county has been notably good.

Owing to the death of many horses in our midst and fear of infection through the poisoned atmosphere adjacent to the exposed corpses, our Board of Health saw proper to issue an order to the end that all dead horses should be buried three feet under the surface of the earth. This order, I believe, has been literally complied with, inasmuch as there has been but one arrest made, conviction following trial, in the Circuit Court.

Our physicians are assisting the Board of Health in reporting all cases of births and deaths. Some time must elapse before all localities will be impressed with the importance of returning birth and death reports and obtaining death permits to bury the human dead. I do not think the infractions are intentional, yet means more potent than those at present employed must of necessity be availed of.

The Board of Health has been greatly assisted in placing before our people the peculiar legislative enactments through the local papers, the Calvert *Gazette* and the Calvert *Journal*, edited and published by Mr. George W. Dowell and Mr. J. Briscoe Bunting respectively, and too much praise cannot be given these gentlemen for their willingness to give the public all information which may inure to the betterment of our county's health.

All persons of sane mind are supposed to know the laws of the land. Since all are subject to them primitively, I would in a charitable mood suggest the printing of cards quite large enough to be attractive, of few words as possible, enough however, to make the purpose intelligible to all, setting forth the law's requirements as to reporting births and deaths, the dangers of infection, the necessity of obtaining permits to bury the dead, the utmost importance of proper vaccination of school children as well as others above the age of twelve months; and that the privileges of public free education are dependent upon vaccination. Cards of this nature worked outupon a model of your own,with your signature as authority for same, would be a gentle reminder that such laws exist, and as mildly, though firmly leading and persuading all to work in conjunction towards one common end and munificent purpose. These cards could be placed in full view of all at general stores and postoffices.

In a very few localities of the county we have had some scarlet fever, say eight to ten cases, and only two cases of typhoid since July 1st. Recognition is hereby made to our genial townsman, J. Briscoe Bunting, Esq., Secretary to the School Board, for his prompt efforts in referring such physician's reports to the teachers of the schools nearest adjacent. The wisdom of such action needs no comment.

Nuisances arising from pig-pens, offal deposits and their like, have not come officially to the notice of this local board; our people are in the main thoughtful of the direful results from such inattention. We report the prompt action of the Road Supervisors in abating a swamp nuisance located at Bowensville. There is no doubt of the possibility of future zymotic troubles being greatly immunized by the drainage of this morass.

Since my appointment, July 1st, there have been recorded one hundred and nine births and sixty-five deaths.

Permit me in closing to testify to the hearty support of our Board of Health in supporting your measures, and to the prompt manner with which you have handled our business. If any success has come to our board it may be traced to your generous guidance and assistance.

Yours very truly,

E. Huggins, M. D.,

Health Officer for Calvert County.

Prince Fredericktown, Md.

CARROLL COUNTY.

Dr. J. S. Fulton, *Secretary State Board of Health.*

Dear Sir: I have the honor to submit the following report: Carroll is in its usual healthy condition. We have had no epidemics during the past year. Of course we have here and there a few cases of typhoid fever, some cases of diphtheria, scarlet fever, measles, etc., as every county or community has. I am not as well prepared to make a complete and accurate report as I would like to make. The custom of reporting cases of contagious diseases is not well instituted in Carroll; for very few cases are reported, therefore I cannot give you an exact account.

As regards birth and death certificates: From some districts in the county nearly all the births and deaths are reported; from other districts only a few are reported. There are still other districts that do not report any births or deaths. I hope that by next year I will be in a position to give you a more complete report.

Yours very truly,

CHAS R. FOUTZ, M. D.,
Health Officer.

Westminster.

CECIL COUNTY.

December, 1900.

DR. JOHN S. FULTON, *Secretary State Board of Health.*

DEAR DOCTOR: The Cecil County Board of Health holds regular monthly meetings, the minutes of which, concerning the sanitary condition, the morbidity and mortality rates of the county, are published in the newspapers, whereby general information is diffused in regard to the public health, including the localities of the prevalence of infectious diseases, and its means of prevention and suppression.

Statistics for the year 1900.

Diseases from Acute Infections—

Diphtheria, 4; membranous croup, 2; whooping cough, 5; la grippe, 7; tetanus, 2; puerperal fever, 1; malaria, 1—22.

Acute Infections, involving the intestinal tract—

Typhoid fever, 13; dysentery, 5; enteritis, 2; cholera infantum, 19; cholera morbus, 1—40.

Brain and Nervous System—

Meningitis, 8; convulsions, 7; paralysis, 7; apoplexy, 12; brain softening, 4; spinal sclerosis, 2; epilepsy, 2; cerebro-spinal meningitis, 1; cholera, 1—44.

Tubercular Diseases—

Consumption, 38; tubercular peritonitis, 3; tubercular meningitis, 2—43.

Acute infections, 62; brain and nervous system, 44: tubercular diseases, 43; heart disease, 29; pneumonia, 18; accident, 16; Bright's disease, 15; cancer, 13; malnutrition, 11; old age, 9; unknown, 8; general debility, 8; marasmus, 4; bronchitis, 4; senile decay, 3; peritonitis, 3; alcoholism, 3; still born, 3; obstructive bowels, 2; gastritis, 2; child birth, 1; asthma, 1; atelectasis, lungs, 1; cystitis, complicated, 1; gangrene, 1; suicide, 1; hernia, strangulated, 1; anæmia, 1; lupus, 1; laryngitis, 1; diabetes, 1—311.

The causes, rather than the number of the deaths, have been the object of particular consideration. One-fifth of them were due to acute infections, which every one regards as preventable. If you add to these forty-three from tuberculosis, which we are constantly informing the public is a germ disease, and consequently infectious, it makes a total of over one hundred preventable deaths. Considerable public clamor was raised over four deaths from diphtheria, and but passing attention was paid to more than ten times that number from tuberculosis. Some organized joint effort of the State and County Boards of Health is needed to check this scourge, which is on the increase, not only in this county, but in the State.

RECORD OF SOME INFECTIOUS DISEASES.

DISEASE.	January.	February.	March.	April.	May.	June.	July.	August.	Sept.	October.	November.	December.	Total.	Recovered.	Died.
Typhoid Fever	1	..	..	..	..	..	3	15	28	66	10	3	126	113	13
Diphtheria	4	1	..	..	..	1	..	..	2	18	12	..	38	34	4
Scarlet Fever	10	14	3	11	8	1	3	4	3	5	1	7	70	70	..

Two cases of membranous croup were reported only by death certificates.

There were unusual outbreaks of typhoid fever at Providence Paper Mills, Port Deposit and Elkton. At Providence there were thirteen cases. One spring probably caused nine cases, and the others were infected by them. Some sanitary defects were pointed out, and received prompt and radical treatment at the hands of the superintendent and foreman.

During September eleven cases appeared in Port Deposit, a town peculiarly free from this disease. The privies and closets in many sections are placed on a higher level than the source of drinking water, and by reason of this faulty arrangement, the majority of these cases (and probably all) were infected by the discharges of persons going to Port Deposit after having contracted the disease elsewhere.

In October and November, the town of Elkton experienced the clearest typhoid fever milk epidemic in the history of medicine. There were fifty-six cases served from one of four dairies, and during the period of this outbreak there were no other cases in the town. There were but five other cases during the whole year, and one of these is known to have been contracted in another State.

The death rate for the town of Elkton, the county seat, was 16.95 against 13.07 in 1899, and 18.84 in 1898. Of forty-three deaths twenty-one were among the colored people, who number 510 in a population of 2,542. The rate for the white population was 10.82 and for the colored 41.17. This latter percentage causes no great alarm, except from the facts that nine deaths were due to tuberculosis, and that the rate of this classical contingent gives the town, as a whole, a high death rate, which, in the absence of precise information, is scarcely warranted.

An ordinance prohibiting the keeping of pigs within the town limits goes into effect January 1, 1901.

There has been no diphtheria since May, 1899, and typhoid fever has steadily decreased, exclusive of the epidemic above mentioned, which must not in any way be charged against the town.

At the September meeting, the Local Board of Health opened up the subject of a county hospital. Some little public attention and sentiment in its favor has been awakened. One of its uses would be to limit the spread of infectious diseases. The county is provided with a small pesthouse.

One removable contributing cause of disease may be found in the construction of the dwelling-houses. Cecil county is well fed, but poorly housed. Too often is the dwelling-house built with the dominant idea of making two rooms fill a space none too large for one; too often the sun and the wind are shut out as common enemies: too often is the basement foul, damp, unlighted and unventilated; too often is the site upon the side or at the bottom of a hill, wet, undrained, and mayhap incapable of drainage. This explains some of our consumption, pneumonia, and heart disease—the result of rheumatism.

Some improvement can be noticed in recent years where the houses are occupied by owners; but no appreciable stride toward better things will be witnessed until the statute which forbids the sale of tainted meat and embalmed milk makes it a crime to sell the use of living rooms which are totally unfit to live in.

Three hundred and twenty-two births were reported during the year—over one hundred short of the actual number.

Very respectfully,

Howard Bratton, M. D.,

Elkton. *Health Officer.*

CHARLES COUNTY.

December, 1900.

Dr. John S. Fulton, *Secretary State Board of Health.*

Dear Doctor: In obedience to the law requiring health officers to report annually to the Secretary of the State Board of Health, I beg to submit the following:

During the summer and fall we had quite an epidemic of malaria, in fact more than we have had for the past three years. This I attributed to the excessive heat during the summer months, with very little rain, and the excessive rains during the fall, thereby rotting the already dead vegetation, and flooding the county with malarial germs.

During the fall and late summer a few cases of typhoid fever were reported, but very few compared with last year. These cases were nearly all reported by Dr. E. Spencer at Bel Alton.

The sub-registrars of vital statistics were not appointed until late, owing to some misunderstanding in the law by the County Commissioners (or their counsel.) They have been doing very good work since I appointed them, and bid fair to get vital statistics in their respective districts exact.

Between October 1st and December 12th, Dr. Spencer at Bel Alton reported 12 cases of diphtheria, all mild. Antitoxin was used in nearly every case, and patients isolated as soon as discovered with the disease. No deaths were reported from the disease except one, who had the disease complicated with a severe case of kidney trouble of long standing. She was buried according to the rules laid down by the State Board of Health. All houses in which the diseases occurred were disinfected with formaldehyde gas, including the school house, which was closed for thirty days. The last house was disinfected on December 10th, since that time no more cases have been reported. Dr. J. W. Mitchell of Pomonkey, reported one case of membranous croup, which proved fatal.

The small-pox that visited Prince George's county did not reach our county, I am glad to state, but gave us quite a scare, coming down within a very few miles of the border line.

A few cases of scarlet fever have been reported, but were quickly checked.

Small-pox visited our country in April last, a colored boy bringing the disease from Washington, D. C. There were three cases, all in the same house, which was closely guarded day and night. These cases recovered promptly. The two boys had the discrete form, while the mother suffered from the disease in a confluent form. About the time these had recovered, another boy came from Washington on the steamboat with his face peppered with the disease. He was promptly quarantined, and no further cases developed. I suffered a mild case of varioloid, and Dr. A. J. Smoot was appointed health officer for about 30 days pending my recovery.

Respectfully submitted,

C. L. Cecil, M. D.,

Wicomico. *Health Officer.*

DORCHESTER COUNTY.

December 15, 1900.

Dr. John S. Fulton, *Secretary State Board of Health.*

Dear Sir: Since my appointment as County Health Officer, July 1st, Dorchester county has, with the exception of typhoid fever, been remarkably free from contagious and infectious diseases. During this period I have had reported to me one case of scarlet fever and four cases of diphtheria.

The diphtheria was on Taylor's Island and Madison districts and in the practice of Dr. B. L. Smith, who promptly used every endeavor to institute quarantine of families and houses infected, and I have to thank him for his energy and zeal. An occurrence of cases in these localities can be expected, as it is manifestly impossible to use vigorous measures of quarantine or disinfection in remote country sections. All of these cases can be distinctly traced back to the contagion disseminated by a child brought from Baltimore in the spring or summer of 1899. A physician was not called in or diagnosis made until the child was in a helpless condition, neighbors in the town of Madison and relatives in the county had free access to the house, and the contagion spread far and near.

As the County Commissioners have, at my request, agreed to allow diptheretic antitoxin to be furnished free to indigent patients, I hope with the aid of the local physicians to prevent a further spread or epidemic of this disease.

As my appointment as health officer dates from July 1st, any statistics I might furnish as to typhoid fever would be partial and incomplete, I have therefore made no attempt to give the number of cases that have occurred in our county. Dorchester, I am sorry to report, however, has with the rest of Maryland suffered severely during the past year, and while the disease has in no section been epidemic in severity, cases have occurred in such number as to call for much apprehension on my part that the worst is yet to come, and for much study and careful investigation.

While no section of the county has been free from the disease, it seems to have prevailed more largely in the regions bordering the Great and Little Choptank rivers and their tributaries, the upper, higher and more sandy sections seeming this year not to have suffered in proportion to the tidewater regions. This may be partly explained, and in many instances I am sure is due to the fact that the population of Cambridge and in the river sections being composed largely of watermen, whose vocation carries them to Baltimore and all parts of the State, the disease has been contracted by them in other localities and thus brought to Dorchester, which in reality should be credited to the places in which contracted.

As I am health officer for Cambridge, as well as for Dorchester county, I have had an excellent opportunity to study this disease as to its etiology and probable mode of spread, and, as before said, have given the problem much study and careful investigation.

In the county at large, with surface wells and drainage, changing population and people drinking from water supplies, any and all of which may be infected, it is manifestly impossible to follow up the cases and trace them to any direct source of primary infection. In Cambridge the matter is different, and here it seems that some solution, at least partly satisfactory, might be reached; but I am frank to say that excepting the few cases that have occurred here, in common with every town in the State, every summer in my recollection I do not see why this city should have typhoid at all.

Cambridge is one of the few towns in the State having a system of underground sewers for the disposal of night soil from closets and household and kitchen refuse and surface water. These sewers empty into the Choptank river and into the harbor, and in the latter case all sewage reaches the deep river at each ebb tide. Our City Commissioners and efficient bailiff keep the gutters and streets free from weeds, grass and refuse, no surface water stands longer than a few days at the utmost, that only in the suburbs, and the general sanitary condition and cleanliness of the town will, to say the least, compare favorably with any in the State.

Our water supply, drawn from wells three hundred and sixty-five feet deep, is above suspicion, repeated examinations have shown it absolutely free from organic and vegetable matter, and mineral constituents only present in such proportion as to render it palatable and agreeable to taste. It is a fact that a few surface wells do exist, but they are so few as not to menace the general health.

Our milk routes, so far as I have been able to find out, are also above suspicion, and besides the disease has been confined to no especial section of our city and on no especial milk route.

In view of these facts, I am, as above stated, at a loss to see why typhoid fever should exist here at all. While it would be temerity on my part to draw conclusions with the eminent men of our profession whose investigations have led them to conclude and teach that infection is through water and milk supply, and possibly transmission by flies from infected excreta to food, I am convinced, that while in the main these are the modes of transmission they furnish only a part of the story, and that a few years will, perhaps, add wonderfully to our knowledge of this scourge.

In this connection I may mention that one of our county physicians, whose name I have not permission to mention, made a careful study of the horse and hog disease so prevalent in this county this summer. His theory was that this disease was nothing but true typhoid, and he informs me that autopsies showed true typhoid intestinal lesions, and cultures grew the typhoid organism. Should further investigations prove his theory true, it surely opens another channel for study and an immense channel for further infection of whole communities. It is my purpose to follow up this matter next summer should opportunity prese. t itself and make further report upon it.

As nothing more vitally affects the whole State at present than this question of typhoid fever, would it not be well for the State Board of Health to appoint a commissioner to investigate the subject, and devote a section of the next annual meeting to full and systematic discussion of the question?

The summer and fall of 1900 have been exceptionable in their freedom from enteric diseases; this is especially the case in regard to the usual summer complaints, diarrhœa and dysenteries, in both adults and children.

I have been called upon twice to suppress nuisances existing in the county. Action has been taken in one case and litigation is now in process; as the other claimed nuisance was in Hurlock, an incorporated town, with board of Town Commissioners, I have not thought it my place to interfere further than to ask an investigation by a local physician.

I have from July 1st to October 1st recorded and reported to the State Board one hundred and fifty-two births and one hundred and fifty-four deaths. Of deaths, I estimate that I have recorded and reported 95 per cent.; of births, 75 per cent. would be a fair estimate. This I think is about as much as can be expected from a county having the negro population that Dorchester has, living in the forests and swamps, with almost every woman who has reached the age of fifty a midwife, and not one in ten capable of reading and writing, and so unable to read the law, fill the cards, even if I could reach them all with blank certificates.

In conclusion, allow me to thank my fellow physicians for the cordial support I have in the main received from them in all matters leading to the improvement of health conditions, and for prompt and full returns of births and deaths occurring in their practice. With the coming year it is my purpose to attempt to obtain a full report of all infectious and contagious diseases occurring in the county, and I hope to continue to receive their assistance and support.

Very truly yours,

GUY STEELE, M. D., *Health Officer.*

Cambridge.

FREDERICK COUNTY.

December 20, 1900.

Dr. John S. Fulton, *Secretary State Board of Health.*

Dear Sir: My appointment as County Health Officer bears date of May 21, 1900, and I have no data at my command, previous to my appointment, upon which to base a report for the year; and can only therefore give it from the time of said appointment.

On June 23d our Local Board of Health met, and appointed twenty-six sub-registrars for the county; but in several of the districts in the county we have been unable as yet to find competent persons (due to the meager pay) who will consent to serve as sub-registrars. With the corps of sub-registrars that we now have, however, we are able to get nearly a full and correct report of deaths in the county, but regret to state that there is considerable negligence on the part of many physicians in the county in reporting births.

So far as I have been able to obtain the names of midwives in the county, I have furnished them with blank birth certificates, stamped self-addressed envelopes, and copies of the law in reference to registration of births, but have received as yet but four certificates of births from midwives.

All the physicians in the county are supplied by the Local Board of Health with stamped self-addressed envelopes and blank certificates for contagious and infectious diseases.

We also have twenty-two vaccine physicians in the county, and we had an order passed by the board requiring said physicians to use glycerinated virus.

Nine nuisances have been reported and investigated by the secretary of the local board, and ordered to be abated, which, in all the cases, were complied with promptly.

Number of births reported from May 1st to November 30th were two hundred and ten. Number of deaths reported from May 1st to November 30, 1900, were two hundred and sixty-nine.

DISEASE.	May.	June.	July.	Aug.	Sept.	Oct.	Nov.	Totals.
Accident					3		2	5
Apoplexy	2		1	1	2	1	1	8
Appendicitis					1			1
Atrophy of Liver		1						1
Bright's Disease (chronic)		1			2	3	1	7
Cerebro-Spinal Meningitis					1			1
Cancer			1		1			2
Cholera Infantum			8	8	7			23
Cholera Morbus			1	2				3
Congestion of Brain	1							1
Concussion of Brain						1		1
Convulsions					2			2
Croup, Pseudo Membranous							1	1
Dementia							2	2
Diabetes Mellitus	1						1	2
Diphtheria					1	4	2	7
Dysentery			1	1				2
Entro-Colitis			2		2	1		5
Epilepsy			1		1	1		3
Erysipelas							1	1
Gastro-Enteritis				2	2			4
Heart Disease	1	1		6	3	4	7	22
Hemiplegia	1	1						1
Hemorrhage	1		1					2
Inanition				1	1			2
Intermittent Fever							1	1
Iterstitial Gastritis						1		1
Intestinal Obstruction	1				1			2
Mania, (acute)					2			2
Mania a Potu	1							1
Marasmus			2	1	3	3	1	10
Meningitis			1	1		3	1	6
Myelitis					1			1
Nephritis	1				1			2
Paralysis	2	1	2	3	2	1	2	13
Paresis	1	1	1					3
Pertussis			1	2	1	1	1	6
Peritonitis	2	2	1		1	1		7
Phthisis Pulmonalis	2		3	2	5	4	6	22
Premature Birth				1		1		2
Pneumonia	4			1	1	1	3	10
Puerperal Fever				1			1	2
Pyelitis							1	1
Rheumatism			1		2	5		8
Senile Debility	1	4	3	5	2	3	2	20
Softening of the Brain						2		2
Still Born			3	5	5	1	2	16
Sunstroke				1				1
Scarlatina							1	1
Spinal Meningitis (acute)				1				1
Tertiary Syphilis		1						1
Typhoid Fever			2	1	5	5	4	17
Totals								269

There has been comparatively few reports of contagious and infectious diseases. Only seventy-four being reported in all.

Typhoid Fever	32
Diphtheria	17
Scarlatina	9
Measles	8
Pertussis	8
Total	74

Yours very truly,

S. T. Haffner, M. D.,
Health Officer for Frederick County.

FREDERICK CITY.

Dr. John S. Fulton, *Secretary State Board of Health.*

Dear Sir: The registration of deaths and births in Frederick has been quite fully kept during the past year. Under the new law of 1909 I think the registration of births will be more complete than before.

This city has passed through a mild epidemic of typhoid fever during the past summer. There were reported to the health officer thirty-five cases, with only three deaths. There were also reported twenty-five cases of diphtheria, with five deaths.

For a city which has no underground system of sewerage this is a good showing. The death rate for the year has been nineteen to the thousand of population.

The people of this city are indebted to the pure mountain water, which they now have in abundance, for their immunity from severe epidemics. It has been noticeable for some years that contagious diseases, when prevalent in the city, have been mild in character.

TABLE OF DEATHS IN FREDERICK, MD., FOR YEAR ENDING NOVEMBER 30, 1900.

YEAR.	Total Deaths.	Males.	Females.	Whites.	Colored.
1899 December	20	9	11	13	7
1900 January	16	8	8	12	4
February	13	5	8	10	3
March	10	7	3	5	5
April	24	12	12	18	6
May	11	6	5	8	3
June	9	4	5	7	2
July	23	10	13	15	8
August	20	4	16	14	6
September	11	7	4	10	1
October	14	10	4	10	4
November	19	8	11	17	2
Total	190	90	100	139	51

Yours very truly,

CHAS. F. GOODELL, M. D.,
Health Officer for Frederick.

GARRETT COUNTY.

No report.

HARFORD COUNTY.

December 18, 1900.

DR. JOHN S. FULTON, *Secretary State Board of Health.*

DEAR DOCTOR: Diphtheria and typhoid fever have been the prevailing diseases of the county since early last fall until the present time, but both diseases are now fairly under control. A few cases of each have been reported to me. I acted as promptly as I could on cases of diphtheria reported to me, in order to stamp out the dreaded disease. No new cases that I know of at the present time.

One case of small-pox was reported last spring on the Griffith Davis' farm, near Havre de Grace. By the prompt action of our Board of Health the disease did not spread.

I abated several nuisances and fumigated eight school houses and several private dwellings.

Dr. Stokes' bacteriological examinations have been of great help to me.

As I sent you monthly the death and birth certificates I do not think it necessary for me to give you the number recorded.

The health of the county at present is good except a few lingering cases of typhoid fever, also some catarrhal trouble.

Yours very truly,

F. P. Smithson, M. D.,

Forest Hill. *Health Officer.*

HAVRE DE GRACE.

November 8, 1900.

Dr. John S. Fulton, *Secretary State Board of Health.*

Dear Doctor: I herewith respectfully submit my annual report:

From November 1, 1899, to November 1, 1900, there were 47 deaths reported—male, 19; female, 28—of which number 5 were black. Removed for burial, 7; brought here for burial, 21; deaths from consumption, 4; deaths from typhoid, 2.

Cases of infectious diseases reported from November 1, 1899, to November 1, 1900, were: Scarlatina, 5; diphtheria, 7; typhoid fever, 3; pertussis, 4; rubeola, 1.

There were no deaths from such diseases recorded except the two from typhoid, above mentioned.

There has been much talk of late about the prevalence of typhoid here, but no such cases have been reported to the local board.

Very respectfully,

H. S. Weusthoff, M. D.,

Health Officer.

ABERDEEN.

December, 1900.

Dr. John S. Fulton, *Secretary State Board of Health.*

Dear Doctor: Thirty cases of typhoid fever in a population of one thousand, due for most part to use of pump water, contaminated by the discharge ot closet pipes into abandoned wells through town.

Water supply of town first-class; said water supply, stored in stand pipe, comes from an underground spring or lake, filters up through white sand. A few cases of typhoid in families who used town water, but who keep their premises about back yard and privies filthy. No scarlet fever. No diphtheria in the town proper. Five hundred canning hands from cities examined in August and September in and about the town, result one case of suspected typhoid. Compulsory use of town water, and more stringent laws of sanitation would make the town an ideal health resort. Mortality from typhoid fever 0; no deaths, though many of the cases were severe.

Respectfully,

J. H. Kennedy, M. D.,
Health Officer.

HOWARD COUNTY.

December 19th, 1900.

Dr. John S. Fulton, *Secretary State Board of Health.*

Dear Doctor: In 1899 there were a good many cases of typhoid fever, and in most instances due to polluted water. This year there have been fewer cases and of a milder type than for several years Or, was it due to their physicians treating them more scientifically, but there were fewer deaths.

There was considerable diphtheria in 1899 reported, but this year there have been a great many cases, I think one hundred and twenty-two cases have been reported, and I have been compelled to close three of our schools on account of its prevalence. I have been able to trace the origin of many of the cases; a good many were imported, some from Baltimore city, and quite a number from Washington. The disease in many instances spread by the negroes visiting around, and it seems impossible to prevent it in the country. Twenty-eight cases occurred from the visit to a family in which a member had brought it from Baltimore. It is now pretty thoroughly stamped out.

There have been a large number of cases of mild scarlet fever in the county this year, in several instances its spread through the public schools.

The vital statistics law has had good effect, and since the burial permit act went into force, a much larger number of death certificates are coming in, and I do not think there has been a burial in the county without a permit. I have had to send notice to several who were about to violate the law (through ignorance), and in every case permits were gotten. The sub-registrars are taking an interest in the work, thereby enabling me to make a better showing of vital statistics. Many of the doctors are reporting infectious diseases more regularly.

Permit me to say that the Local Board of Health for this county is giving me a great deal of assistance in many respects, endorsing my actions in every instance. They have appointed vaccine physicians in each district, and I believe the children in the schools are very generally vaccinated, and have certificates. In my own district every pupil has been vaccinated.

The laws that were passed by the last Legislature have done much good, but there is still a crying need for more and better legislation in reference to the public health.

Very respectfully,

Thos. B. Owings, M. D.,
Ellicott City, Md. *Health Officer for Howard County.*

KENT COUNTY.

December 19, 1900.

Dr. John S. Fulton, *Secretary State Board of Health.*

Dear Doctor: During the short period of time I have been in office there have not been any epidemics in the county. I have had a few cases of the following contagious diseases reported at different times: Mumps, 9; typhoid fever, 33; whooping cough, 8; diphtheria, 4.

The number of typhoid cases reported shows that typhoid fever is the most prevalent contagious disease. I had the water supply of Chestertown analyzed and it was found to be very bad. I advised all residents, through the county papers, to have the water boiled. Those that followed my instructions escaped the disease.

While nuisances have occurred in different parts of the county the complaints have been less than usual. I therefore believe that the sanitary conditions have been greatly improved.

The vaccine law (especially among the colored) has been greatly abused. The children have been allowed to attend school regardless of the law. The school examiner has called the teachers' attention to this fact, and I will make all haste to get them vaccinated.

The registration law is working splendidly throughout the county. The only complaint is the sub-registrars will neglect to report promptly every month.

Yours respectfully,

James W. Urie, M. D.,

Still Pond, Md. *Health Officer for Kent County.*

MONTGOMERY COUNTY.

January 30, 1901.

Dr. J. S. Fulton, *Secretary State Board of Health.*

I submit herewith my annual report as health officer for Montgomery county.

There has been but a moderate amount of sickness this year, much less fever than formerly, attributable to increased drainage.

In October at a settlement called Mount Zion there were five cases of diphtheria, four deaths, confined to one house, and carried there in clothing sent from Washington, and did not extend beyond that house.

In November I heard there was a case of small-pox, near Lakeland, not far from the Prince George's county line. I requested Dr. I. R. Batson to take charge of the case, vaccinate the inmates and quarantine the house. The case recovered and no extension.

The law in regard to vaccination has been complied with as far as concerns children of school age.

Respectfully submitted,

E. E. Stonestreet, M. D.,

Rockville. *Health Officer.*

OLNEY DISTRICT.

December 13, 1900.

Dr. John S. Fulton, *Secretary State Board of Health.*

Dear Doctor: One of the active works of our board during the past year was to be recognized by the County Commissioners. Through inadvertence we were left out of the Maryland Code of Laws. An appeal to able attorneys soon convinced our Levy Court that we had the *raison d'etre*, and they have made a levy for our support, much to our gratification and the safety of the public, who seem to be heartily in favor of having an active organization to whom they can appeal in all health matters.

One of our members reported to our meeting one year ago that he had introduced the subject of trying to get a legislative act to prohibit pig-pens and other nuisances within certain distances of dwellings, at the last meeting of the Maryland Public Health Association, which was referred to the committee on legislation. This action was endorsed by our board, as cases of sickness were thought to be directly traceable to these nuisances, which furnish a fruitful soil for the development of typhoid fever and other disease germs.

Our board was instrumental through a committee appointed to wait upon the County Commissioners in having antitoxin furnished to those who were too poor to purchase it in the treatment of diphtheria.

We have also been on the alert, and have reported cases to the School Board where public school teachers had not carried out the law in having the scholars vaccinated.

One of our members was invited and delivered a lecture before the County School Teachers' Institute upon the important subject of ventilation.

During the past year our board has been honored by having one of its members selected chairman of the Maryland Public Health Association.

Our Board of Health having a special act creating us, and as all boards of health in Maryland are required to send in vital statistics, we elected a registrar and health officer, and are making returns direct to the Secretary of the State Board of Health.

Hog-cholera broke out in our district, which was investigated by a committee of the board, and a report sent, according to law, to the secretary of the Live Stock Sanitary Board.

A few of the contagious and infectious diseases have prevailed to a small extent in our district during the past year, but there has been no epidemic of any kind. We have abated nuisances, and have a distinct and separate committee appointed for each village to investigate sanitary conditions.

Our board is a voluntary one, meeting quarterly, none of its members receiving any pay for the time spent in attending meetings, abating nuisances, etc. The county only furnishes disinfectants and tools with which to work, consequently we have cost the county only $21.15 in sixteen years, or one dollar and thirty-two and three-sixteenths cents a year. There never has been a dropped meeting, and during these sixteen years our minutes will show that the board does not exist only in name, but much work has been done for the good of the public.

We are endeavoring to carry out the laws in our district by gathering vital statistics, and making it compulsory for undertakers and others to get a permit in order to bury every human being.

We have sustained a severe loss in the death of our president, Henry C. Hallowell, who was president of the board from its organization in 1884 until his death last year.

Respectfully yours,

Charles Farquhar, M. D.,
Health Officer.

PRINCE GEORGE'S COUNTY.

December 26, 1901.

Dr. John S. Fulton, *Secretary State Board of Health.*

Dear Sir: The registration of vital statistics in our county during the year just ending has been very satisfactory. This is due to two causes, viz.: the act of the Legislature of 1898, which imposes a heavy penalty upon those who fail to comply with the law, and the order of our local Board of Health in allowing a liberal compensation to the sub-registrars for the ervices required of them.

We have had several very serious nuisances to contend with during the year, and while it is true that in every case we have been able to satisfactorily get rid of them, yet upon a close examination it has been found that the present law bearing on this subject is very defective, and should at the next session of our Legislature receive attention..

The law requiring all children to be vaccinated before being admitted to the public schools has been very seriously neglected. By a joint action of our County School Board and County Board of Health the matter has been very satisfactorily attended to, and the law will be rigidly enforced in the future.

We have had eight or ten cases of scarlet fever in the county during the present year, but by the prompt and efficient attention of the physicians who had these cases in hand there was no spread of the disease. Six cases of diphtheria have been reported, but in no instance has there been more than two cases in one family. clearly demonstrating, I think, that the physicians of today know how to handle intelligently these diseases, which only a few years ago were such a dread to every community.

Our county authorities have had considerable trouble in handling a number of cases of small-pox during the present year. This disease was brought into the county last July from the District of Columbia. During the months of July and August seven or eight cases appeared at Lakeland, about seven miles from Washington, on the Baltimore and Ohio Railroad. Every possible effort was made to prevent a spread of the disease, and no cases were reported outside of Lakeland until the latter part of October, when the disease appeared at College Park and Hyattsville. Quite a number of cases have recently broken out at Hall's Station, on the Baltimore and Potomac Railroad. All of these cases have been among the negroes, and of such a mild character that many cases are concealed until the disease is well advanced. This of course is done to prevent being quarantined. Near Laurel, on the Baltimore and Ohio Railroad, two cases have recently appeared, but by the prompt and efficient action of the authorities of the town of Laurel in aiding the county authorities to prevent a spread of the disease, no fear is entertained.

Considerable difficulty has been experienced in handling these cases, on account of the action of certain physicians in attempting to throw all of the responsibility upon the health officer, and by their action rather encouraged those suffering from a mild attack to break quarantine and thus spread the disease. I am glad, however, to say that this is confined to two or three physicians. With these exceptions the physicians of the county have acted promptly and intelligently, and have given hearty cooperation to the County Board of Health in every matter coming to its attention. I am,

Very truly yours,

L. A. GRIFFITH, M. D.,

Upper Marlboro, Md. *Health Officer.*

QUEEN ANNE'S COUNTY.

December 18, 1900.

DR. JOHN S. FULTON, *Secretary State Board of Health.*

DEAR DOCTOR: On May 1, 1900, I was appointed Health Officer of Queen Anne's county, and resigned December 1, 1900, on account of moving from the county.

During that time I had water from three different wells examined, and all three were reported as not good drinking water, and unsafe for that purpose.

Five cases of typhoid fever were reported to me, and one case of scarlet fever. No epidemics of any kind except diphtheria, which occurred during the month of July in Templeville, and started by a child coming from an infected district in Philadelphia. Soon after this child reached Templeville it was taken sick with diphtheria. Six other cases broke out and four more followed. Four deaths occurred in twenty-four hours before my arrival. With the help of the local physician, Dr. J. E. Golley, I quarantined those families whose children were sick, and antitoxin was freely used. No more cases occurred and no more deaths.

I found the pathological department of the State Board of Health, under Dr. William R. Stokes, invaluable to me, and whenever I sent specimens for microscopical examination to him his replies were always prompt and explicit, and a great help to me.

At this present time the county is in a very healthful condition.

Yours very truly,

CHAS. F. DAVIDSON, M. D.,

Queenstown. *Former Health Officer.*

(Dr. James Bordley, Centreville, is now Health Officer ot Queen Anne's county.)

December 14, 1900.

Dr. John S. Fulton, *Secretary State Board of Health.*

Dear Doctor: Since my last report to you as Health Officer for Queen Anne's county, the sanitary and health conditions within my jurisdiction have been even more than usually good. During my incumbency, which ended May 1st of this year, I have had no calls (from any part of the county) to investigate threatened outbreaks of any kind, and the usual complaints of local nuisances have been infrequent. The time between the date of my last annual report and the termination of my last term of office, has been both short and uneventful. My successor, Dr. Chas. F. Davidson, may, perhaps, be able to supplement this barren statement from a more active and interesting experience, as I have heard of at least one threatened epidemic—of diphtheria—in the county within the time of his incumbency.

Since the resignation of Dr. Davidson, a few weeks ago, I have again been appointed to the office of local secretary, and perhaps during the coming term I may have abundant material for the report of 1901.

At the risk of prolixity I feel constrained to call attention to the almost phenomenal health conditions of this county. The past twelve months have but served to strengthen and confirm the correctness of my previous reports and predictions regarding the progressive salubrity of this climate, and the continually increasing attractions offered along these all-important lines to those persons who are seeking a locality for either permanent homes or temporary sojourn. I know no section or locality where actual results are more in evidence than here. Year by year the fact becomes more apparent, demonstrable and convincing until it is no longer a theory or speculation, but a paramount condition.

Yours very truly,

James Bordley, M. D.,

Centreville. *Health Officer.*

SOMERSET COUNTY.

No report.

CRISFIELD.

Dr. John S. Fulton, *Secretary State Board of Health.*

Dear Sir: About two years ago Dr. G. T. Simonson and I were appointed health officers for Crisfield, and entered upon the performance of our duties with enthusiasm, knowing that there was urgent necessity for considerable sanitary work in this town.

We soon discovered that we would get no assistance either from the authorities or the people. Dr. Simonson agreed to register all the births and deaths in the town, and I to make out the burial permits. He attended to his part of the work faithfully for a few months, but when he learned that it would be all work and no pay, he quit. I have made out thirty burial permits during the year, but I don't write any more unless I get paid for my services. The Town Commissioners will not pay us, neither will the County Commissioners.

I wish that we could have a good Board of Health in this town, but under the present law I do not see how it is possible for us to do anything. If the Town or County Commissioners cannot be compelled to pay the health officers, then the health officer cannot be expected to work.

I enclose you a lot of death certificates, which you can use as you like.

Yours very truly,

J. F. Somers, M. D.

ST. MARY'S COUNTY.

December 16, 1900.

Dr. John S. Fulton, *Secretary State Board of Health.*

Dear Doctor: I have no cases of a contagious character to report during the past year, except one of scarlet fever and one of diphtheria, both of which were contracted in Baltimore. I have received no notice of any cases of typhoid fever in the county. We have had an unusual number of cases of remittent fever, brought on I think from excessive heat and dry summer.

I have to complain of the carelessness and negligence on the part of physicians of the county in not reporting their births and deaths to the local health officer. I hope there will be an improvement in some during the coming year.

Very respectfully,

Thomas Lynch, M. D.,

Leonardtown. *Health Officer.*

TALBOT COUNTY.

December 18, 1900.

Dr. John S. Fulton, *Secretary State Board of Health.*

Dear Sir: In making my report as Health Officer for Talbot county, will say that since my coming into the office, May 1, 1900, the general health of the county has been good, and although the weather during the summer was very trying, still the reports of physicians showed very little disease. Typhoid fever was reported from Tilghman's Island from mid-summer until December 1st. At the request of Dr. S. K. Wilson I visited the island on my return from the State Board of Health meeting, December 6th, but could not place the trouble to any one cause, but made some suggestions, which, if carried out, I hope may be of benefit. Typhoid fever reports from Dr. Ross, of Trappe, stated that he had fifteen cases at that time, the middle of October, and he thought the cause was bad water. During the summer I had several cases of typhoid fever, which I think were due to bad water, and improperly ventilated cellars in two other cases. I cannot give the exact number of typhoid cases, as the physicians have not been reporting them as they should have done.

Only two cases of scarlet fever have been reported, and I used the formaldehyde regenerator in each case. Fifteen cases of diphtheria reported, and I gave antitoxin in fourteen of these cases. All recovered except one, a child of four years. This case was not reported in time. The houses in which these children live were all fumigated with the formaldehyde gas, and there seemed to be no remaining effects. The cause of these cases could not be located, although a thorough investigation was made in each case. An improperly ventilated cellar we thought was the cause in one family, and in two others a badly conducted tomato canning factory. As no complaints had been made, I knew nothing of it until the last case was reported, when I was requested to see the case, and, if I thought necessary, give antitoxin. I was then informed of the cannery, but the canning season was then just over.

With the incoming year I will try to get our physicians to be more prompt in reporting disease and death, and hope to be able to make a more satisfactory report.

Yours very truly,

Easton. E. R. Trippe, M. D., *Health Officer.*

WASHINGTON COUNTY.

December 19, 1901.

Dr. John S. Fulton, *Secretary State Board of Health.*

Dear Doctor: Since May 1, 1900, at which time I was appointed health officer for Washington county, there has been reported to this office thirty-two cases of diphtheria, twelve cases of scarlet fever, and twenty-seven cases of typhoid fever from the different districts of the county as follows:

Diphtheria—Hagerstown, 14 cases; Bissell, 13; Brownsville, 5; Williamsport, 1; Highfield, 1—total, 32.

Scarlet Fever—Hagerstown, 2 cases; Sharpsburg, 9; Leitersburg, 1—total, 12.

Typhoid Fever—Hagerstown, 13 cases; Funkstown, 13; Huyett, 1—total, 27.

Trusting that this may be satisfactory, I am,

Yours very truly,

O. H. W. Ragan, M. D.,
Health Officer.

Hagerstown.

WICOMICO COUNTY.

December 15, 1900.

Dr. John S. Fulton, *Secretary State Board of Health.*

Dear Doctor: You will please find enclosed report of cases in Wicomico county: Typhoid fever, 38; scarlet fever, 31; measles, 52; typho-malarial fever, 23; diphtheria, 8; chicken-pox, 16; mumps, 13.

Yours respectfully,

C. R. Truitt, M. D.,
Health Officer.

Salisbury.

WORCESTER COUNTY.

December 17, 1900.

Dr. John S. Fulton, *Secretary State Board of Health.*

Dear Doctor: The general health of the county is good, and will favorably compare with any other county in the State. We have had a few cases of typhoid fever, most of which, however, has been of a mild type, readily responding to proper treatment, excepting one in which it was unusually severe, resulting in two deaths. Its origin in this family was most likely due to unsanitary environments, as it invaded the same family the previous year. We had one case of diphtheria in this town (Snow Hill), which was promptly relieved by the antitoxin treatment. We note also some cases of measles, with fatal results in two cases. We have had very little malarial fever.

The county is divided into three vaccine districts, with a physician to each district. We have reason to believe that they are faithfully discharging their respective duties.

The late legislation in regard to vital statistics has awakened renewed interest in that direction, as evinced in the largely increased reports of births and deaths; more attention being evidently given to the latter than the former. The people are being educated to its importance, so that in a year hence we indulge in the hope that the returns will be so full and complete that we shall have a reliable basis for the birth and death rate of this county. We have recorded from January of this year to date (December 17) two hundred and seventeen death certificates, but only thirty-one of births, evidently showing great neglect in regard to the latter. How shall we remedy this gross dereliction of duty on the part of our physicians and midwives?

Yours very truly,

CHAS. P. JONES, M. D.,
Health Officer.

Snow Hill.

COUNTY HEALTH OFFICERS.

COUNTIES.	NAMES.	ADDRESSES.
Allegany	Dr. Chas. H. Brace	Cumberland.
Anne Arundel.	Dr. H. R. Walton	Annapolis.
Baltimore	Dr. T. Ross Payne	Corbett.
Calvert	Dr. E. Huggins.	Prince Frederick.
Caroline.	Dr Jacob L Noble	Preston.
Carroll	Dr. Charles R. Foutz	Westminster.
Cecil	Dr. Howard Bratton	Elkton.
Charles	Dr. C. L. Cecil	Wicomico.
Dorchester	Dr. Guy Steele	Cambridge.
Frederick	Dr. S. T. Haffner	Frederick City.
Garrett	Dr. W. H. Ravenscroft	Oakland.
Harford	Dr. F. P. Smithson	Forest Hill.
Howard	Dr. T. B. Owings	Ellicott City.
Kent	Dr. Jas. W. Urie	Still Pond.
Montgomery	Dr. E. E. Stonestreet	Rockville.
Prince George's	Dr. L. A. Griffith	Upper Marlboro.
Queen Anne's	Dr. James Bordley	Centreville.
Somerset		
St. Mary's	Dr Thos. Lynch	Leonardtown.
Talbot	Dr. E R. Trippe	Easton.
Washington	Dr. O. H. W. Ragan.	Hagerstown.
Wicomico	Dr. Chas. R. Truitt	Salisbury.
Worcester	Dr. Chas. P. Jones	Snow Hill.

TOWN HEALTH OFFICERS.

TOWNS.	NAMES.
Aberdeen	Dr. J. H. Kennedy.
Annapolis	Dr. Wm. S. Welch.
Brunswick	Dr. H. S. Hedges.
Catonsville	Dr. Chas. L. Mattfeldt.
Cumberland	Dr. J. M. Spear.
Frederick	Dr. C. F. Goodell.
Frostburg	Dr. W. O. McLane.
Havre de Grace	Dr. H. S. Weusthoff.
Highlandtown	Dr. J. C. Schofield.
Kensington	Dr. Wm. L. Lewis.
Lansdowne	Dr. Frank Ruhl.
Laurel	Dr. J. F. Billard.
Lonaconing	Dr. J. O. Bullock.
Olney	Dr. Chas. Farquhar.
Takoma Park	Mr. L. M. Mooers.

REPORT OF THE ANALYST,

February 14, 1901.

DR. JOHN S. FULTON, *Secretary State Board of Health.*

DEAR SIR: During the year ending January 1, 1901, I made the following anylyses: Waters, 166; milks, 3; creams, 1; butter color, 2; effluent from bleach mill, 1.

The waters may be divided into two heads, private and public—private, 112; public supplies, 54.

Below I have distributed the waters into counties, and accompanying this I submit a tabulation of the public supplies: Allegany, 8; Anne Arundel, 3; Baltimore, 49; Carroll, 4; Cecil, 22; Dorchester, 1; Frederick, 8; Garrett, 3; Harford, 5; Howard, 10; Kent, 3; Montgomery, 9; Prince George, 1; Queen Anne's, 3; Somerset, 11; Talbot, 2; Washington, 7; Wicomico, 5; Worcester, 10.

Yours respectfully,

W. B. D. PENNIMAN, *Analyst.*

ANALYSES OF PUBLIC WATER SUPPLIES THROUGHOUT THE STATE. FIGURES IN "PARTS PER MILLION."

SOURCE OF SAMPLE.	Total Residue at 230° F.	Amount of Chlorine.	Nitrogen as "Free Ammonia"	Nitrogen as Albuminoid Ammonia.	Nitrogen as Nitrates.	Nitrogen as Nitrites.	Character of Water.	
Pocomoke City..........	416.	111.4	.47	.05	None	Trace	Fair	Artesian well
Pocomoke City...	262.	8.4	.58	.02	None	Trace	Good	" "
Cumberland	718.	57.5	.46	.1	None	None	Bad	Artesian well
Frostburg	124.	1.7	.07	.12	Trace	None	Good	" "
Frostburg	46.	1.5	.03	.09	Trace	None	Good	
Princess Anne.	388.	24.6	.19	.15	.75	Present	Bad	Artesian well
Princess Anne.	2940.	672.	.79	.16	Trace	Trace	Bad	" "
Princess Anne	2118.	616.	.61	.11	Trace	Present	Bad	" "
Princess Anne...........	510.	89.6	Trace	.07	14.68	Present	Bad	Old well
Princess Anne...........	2138.	608.	.83	.11	Trace	Present	Bad	New well
Princess Anne...........	328.	124.3	Trace	.70	13.65	Trace	Bad	
Princess Anne.	146.	22.5	.04	.10	3.40	Trace	Bad	
Highlandtown	94.	6 5	.05	.10	1.00	Present	Bad	Stream
Roland Park....	126.	6.1	.02	.05	1.15	None	Good	Artesian well
Mt. Washington........	170.	4.6	.06	.05	.90	Trace	Good	" "
Sparrow's Point..........	82.	3.1	.06	.05	7.23	None	Good	
Towson.....	142.	4.5	.03	.06	Trace	None	Good	Artesian well
Catonsville	124.	4.2	.01	.14	Trace	None	Good	" "
Annapolis.	42.	3.0	.02	.12	Trace	None	Good	

Taneytown	140.	5.1	None	.15	.60	None	Good	
Union Bridge	122.	4.6	.22	.12	5.65	Trace-	Bad	
New Windsor	640.	65.8	.05	.09	18.50	Consid.	Very bad	
Westminster	64.	3.8	.12	.15	2.60	None	Good	
Elkton	66.	4.5	.03	.09	.75	None	Good	
Havre de Grace	126.	4.	.06	.11	Trace	None	Fair	
Cambridge	492.	11.6	.18	.06	None	None	Good	
Chestertown	82.	12.2	.03	.11	6.25	Present	Bad	
Centreville	190.	4.4	.30	.03	Trace	None	Good	
Easton	276.	11.8	Trace	.03	Trace	Trace	Good	
Pocomoke City	396.	97.	.50	.07	None	None	Fair	
Ocean City	260.	31.5	.33	.07	None	None	Fair	Atlantic Hotel
Ocean City	196.	15.5	.50	.08	None	None	Fair	Congress "
Crisfield	1116.	320.	Trace	.05	.60	None	Bad	
Princess Anne	168.	22.5	.05	.05	7.05	Present	Bad	
Salisbury	144.	23.5	.05	.08	5.00	Trace	Bad	
Mountain Lake Park	20.	2.3	.03	.05	None	None	Good	
Lonaconing	44.	1.1	Trace	.15	Trace	None	Good	
Frostburg	84.	2.1	Trace	.05	None	None	Good	
Cumberland	112.	2.4	.10	.11	Trace	Trace	Suspicious	
Hagerstown	28.	2.4	.02	.06	.50	None	Good	
Frederick	48.	2.3	Trace	.03	1.00	None	Good	
West Arlington	108.	5.9	None	.09	.95	None	Good	
Annapolis	120.	4.6	.07	.05	None	None	Good	Artesian well
Perryville	36.	3.5	.03	.17	.05	None	Good	
Port Deposit	64.	3.8	.04	.08	Trace	Trace	Suspicious	
Thurmont	18.	1.2	None	None	.02	None	Good	
Emmittsburg	28.	3.3	None	Trace	Trace	None	Good	
Conowingo	100.	3.8	Trace	.05	2.00	None	Good	Fountain
Mountain Lake	36.	2.1	Trace	.02	Trace	None	Good	Water-works
Port Deposit	158.	5.	Trace	.08	3.25	Trace	Suspicious	Hotel
Rossville	44.	7.8	Trace	.05	2.00	None	Suspicious	Public school
Elkton	74.	4.9	Trace	.08	1.50	None	Good	Town supply
Port Deposit	14.	3.	.10	.21	.50	None	Fair	Water Co. –
Frederick	54.	4.2	.03	.09	.50	None	Good	Public school

REPORT OF THE BACTERIOLOGIST.

Dr. John S. Fulton, *Secretary State Board of Health.*

Dear Sir: I hereby respectfully submit my report on the work performed in the bacteriological laboratory from December 15, 1899 to January 1, 1901.

Examinations for Physicians for the Detection of Disease.

Table No. 1.

Examinations of blood for the typhoid reaction: Positive reactions, 199; negative reactions, 260—total, 437.

Examinations of sputum for tuberculosis: Tubercle bacilli present, 78; tubercle bacilli not present, 91—total, 169.

Examinations of suspected diphtheria: Positive cases, 117; negative cases, 153—total, 270.

Examinations of blood for suspected malaria: Positive cases, 6; negative cases, 81—total, 87.

Examinations of water, 118.

Examinations of milk, 56.

One positive examination of tubercular abscess.

The Bacteriological Examination of Milk.

In fifty-six examinations of milk from Baltimore county the tubercle bacillus was found in four instances. In connection with this subject I take great pleasure in calling your attention to the work of E. M. White, which I have included in my report. This shows that milk often contains an excessive number of bacteria as well as pus cells. The large summer infant mortality caused by the various intestinal disturbances is largely due to drinking contaminated and impure milk. More frequent examinations of milk, especially from individual cows, will show that many animals which supply large communities are either suffering from tuberculosis or purulent inflammation of the udder or garget. Both of the conditions introduce germs into the milk which can cause fatal diseases, especially in children and infants. Such cows should be excluded from a herd supplying milk to the public.

In a general way it can also be stated that the estimation of the number of bacteria in one cubic centimeter of mixed milk is a good sanitary index of the condition of the dairy. Clean dairy farms, milking in the open air, with proper utensils, and careful milkers will run from one to ten or twenty thousand bacteria per cubic centimeter (15 drops), if refrigeration is carried out even in shipping. On the other hand, dirty dairy farms and stables, milking inside, careless, unclean milkers, adulteration with impure water, dirty utensils, failure to use proper precautions as to refrigeration in shipping, and sick cows will give a milk running from fifty thousand to even one million bacteria to the cubic centimeter.

Report on Some Examinations of Milk.

This investigation of milk was begun May 1, 1900. The first samples collected were taken from various dairies in Baltimore receiving milk from the country, north of the city, under the same condition in which they are received by the consumer.

In testing milk we first determined the number of germs or bacteria present in the sample. This is done by first sterilizing a glass dish by heat; the milk is then poured into melted gelatine, and this fluid is poured into the sterile glass dish. All of the germs present in the milk will enormously increase and develop into spots all over the surface of the gelatine. These spots represent the original number of germs present, as each germ develops into a spot or colony. The number of germs in the milk can therefore be counted by estimating the colonies present on the surface of the gelatine. This is done by means of the apparatus which I will show. The pus cells are estimated by spreading the milk over a glass slide drying it, and then staining with a blue anilin dye. The pus cells stain blue, and can be counted under microscope. The tubercle bacilli are stained by special dyes.

The results from the dairies mentioned above are as follows:

Dairy.	*Bacteria per* 5 *C. Cm.*	*Pus Cells.*	*T. B.*
No. 1	15,360	.0	0
" 2	17,760	1.3	0
" 3	29,520	1.4	0
" 4	383,200	.95	0
" 5	11,440	.45	0
" 6	292,800	.2	0
" 7	249,600	.4	0
" 8	51,360	.0	0
" 9	5,160	.0	0
" 10	15,600	1.5	0
" 11	64;000	.65	0

The next examinations made were from specimens collected from dairies having either the clarification or filtration process.

CLARIFICATION.

Clarification is practically the separation of milk under the influence of centrifugal force into its different parts according to the rule of specific gravity, namely, into cream, skim milk and milk sediment. The cream, being the lightest substance, is forced to the center of the machine, while the skim milk forms a middle ring, and the impurities being heaviest are forced as a deposit against the outside of the separator bowl.

It is quite interesting to notice that there are two distinct kinds of sediment found in a modern separator: milk slime, composed of the decomposed milk cells, pus, bacteria, colostrum, etc., and a deposit of foreign matter entering the milk from outside sources.

As indicated in the foregoing, the clarifier is actually a separator, the covers of which are so constructed that the cream and skim milk, separate during the process, leave the machine remixed from the same spout; while in the separator the cream and skim milk are carried off through separate spouts.

Specimens were taken from the tank in which the milk is weighed before entering the clarifier, after passing through the clarifier, after cooling, from bottle filler, and from bottles in wagons as it is delivered to customers. Specimens from the tank contained 96,000 bacteria, .05 pus cells, a few cocci, and no tubercle bacilli. Specimens taken before entering the clarifier contained 122,400 bacteria, .15 pus cells, and no tubercle bacilli. Specimens after passing through the clarifier contained 135,600 bacteria, .02 pus cells, and no tubercle bacilli. Specimens after cooling contained 129,600 bacteria, .1 pus cells, and no tubercle bacilli. Specimens from bottle filler contained 124,200 bacteria, .05 pus cells, and no tubercle baccilli. Specimens from bottles in wagon contained 99,000 bacteria, no pus cells, and no tubercle bacilli.

FILTRATION.

Filtration of milk aims to remove the milk sediment with the aid of the filtering material. Unfortunately a milk filter cannot be constructed fine enough to remove all or even a greater part of bacteria, like the Pasteur filter, for the reason that the filtering material, if close enough to retain bacteria, would necessarily retain the milk solids also. Filters for milk are therefore constructed of a granulated material, such as crushed flint, sand, etc.

The filter is suspended below the milk receptacle and connected with it in such a way that the milk has to enter the filter from below, and after passing through the filtering material leaves it from an upper outlet. Mixed milk from tank before filtration contained 31,200 bacteria, 3 pus cells, a few streptococci and cocci, and no tubercle bacilli. Filtered milk before passing over cooler, 28,440 bacteria, .35 pus cells, and no tubercle bacilli. Filtered milk after passing cooler, and five minutes after filtration, contained 16,000 bacteria, no pus cells and no tubercle bacilli. Fifteen minutes after filtration number of bacteria 25,440, and 32 pus cells. Twenty-five minutes after filtration, number of bacteria 12,000, .25 pus cells, and no tubercle bacilli. Thirty-five minutes after filtration, number of bacilli 26,640, .15 pus cells, and no tubercle bacilli. First portion of milk running through filter after reversal of joint, number of bacteria 41,280, 2.3 pus cells, streptococci in long chains, and no tubercle bacilli. This milk is not used. Lastly, after reversal of joint of filter, the number of bacteria is 25,640, 1.3 pus cells, and no tubercle bacilli.

An examination of another process for clarifying milk shows that a specimen taken before contained 12,120 bacteria, 1.2 pus cells, and no tubercle bacilli. Specimen one minute after contained 13,840 bacteria, one pus cell, and no tubercle bacilli. Specimen three minutes after contained 13,920 bacteria, 4 pus cells, and no tubercle bacilli. Specimen five minutes after contained 12,600 bacteria, .05 pus cells, and no tubercle bacilli. In the last few cubic centimeters passing through filter the number of bacteria was 26,880, 1.3 pus cells, and no tubercle bacilli. Filtered milk as it is delivered to customers two hours after leaving dairy, number of bacteria 30,240, 2.25 pus cells, and no tubercle bacilli present.

Specimens for our next series were obtained from the wagons, small shops, dairies, and stables in the southeastern part of the city. This milk is usually obtained from "bovine infernos" just beyond the city limits. The stables and their surroundings are filthy. The cows are fed on distillery slops, and the milk is obtained in the filthiest possible manner.

CONCLUSIONS.

Our work at present is very limited, but it points to the following facts:

1st. That the milk obtained from the country districts north of Baltimore contains fewer germs and smaller amount of pus cells and other impurities than the milk obtained from the southeastern portions of the city, and the outlying districts.

2d. That although the mechanical processes which we have examined will remove pus cells and other gross impurities, yet the bacterial counts are not generally changed.

3d. That the best samples obtained were from processes involving cleanly handling and refrigeration.

Sick cows are often stabled beside well ones, and some times the herd is never allowed a pasturage. The following results were obtained from such specimens:

Specimen.	Bacteria Colonies.	Pus Cells.	Tubercle Bacilli.	Streptococci.
1	40,800	1.	Present.	....
2	62,400	.4	0	....
3	18,900	.2	0	... ...
4	44,400	2.5	Present.	....
5	46,800	.9	0	....
6	48,000	.5	0	....
7	19,200	1.45	0	....
8	43,200	.3	0	....
9	51,600	9.5	Present.	....
10	40,200	.1	0	....
11	39,600	9.4	0	... .

An examination of Table No. I will show that the routine work of the laboratory has increased during the past year. The comparative figures are as follows:

Typhoid tests 1899, 150; typhoid tests 1900, 437; diphtheria tests 1899, 248 (including one epidemic); diphtheria tests 1900, 270; tests for tuberculosis 1899, 120; tests for tuberculosis 1900, 169; tests for malaria 1899, 28; tests for malaria 1900, 87.

There are a large number of Maryland physicians however who do not use the central laboratory of the State Board of Health, and their interest might be aroused by further circulars, or by meetings or lectures held in the various cities and towns of the State.

THE BACTERIOLOGICAL EXAMINATION OF DRINKING WATER.

A large number of wells and public supplies have been examined during the past year, and Table No. II will give the results in detail.

TABULAR REPORT OF WATER EXAMINATIONS.

Tap, Stream, Well or Spring.	Date.	Colonies Per c. c.	Colon Bacillus.	Quality.
1. Western Run at Ashland	December 5	Aerobic 1,007	Present in 1 c. c.	Bad.
2. Western Run at Ashland	December 5	Aerobic 3,820	Present in 1 c. c.	Bad.
E. C. Shipley	December 5	Aerobic 15,000	Present in 50 c. c.	Bad.
Mrs. G. Cockey, Lutherville	December 13	Aerobic about 300,000	None in 1 or 50 c. c.	Bad.
Mrs. J. F. C. Talbot, Lutherville	December 13	Aerobic 204,000	Present in 50 c. c.	Bad.
Mr. E. Herman, Lutherville	December 13	Aerobic 132,000	Present in 1 c. c.	Bad.
Female or Maryland College, Lutherville	December 13	Aerobic 324,000	Present in 50 c. c.	Very bad.
1. Salisbury Public Water Supply	March 2	Aerobic about 100,000	None in 1 or 5 c. c.	....
2. Salisbury Public Water Supply	March 2	Aerobic about 500,000	None in 1 or 5 c. c.	....
Well, Garrett county	March 9	Aerobic 18,540	None in 1 c. c.	....
Spring, Garrett county	March 9	Aerobic about 500,000	None in 1 c. c.	....
New Well, Princess Anne	April 7	Aerobic 136	None in 1 or 50 c. c.	Good.
Old Well, Princess Anne	April 7	Aerobic 224	None in 1 or 50 c. c.	Good.
R. E. Powell & Co., Salisbury Water Co., Salisbury	April 12	Aerobic 73	None in 1 or 50 c. c.	Good.
Adams Express Office, Salisbury Water Co., Salisbury	April 12	Aerobic 65	None in 1 or 50 c. c.	Good.
No. 3 Mill, Salisbury Water Co., Salisbury	April 12	Aerobic 56	None in 1 or 50 c. c.	Good.
Jackson's Pea House, Salisbury Water Co., Salisbury	April 12	Aerobic 376	None in 1 or 50 c. c.	Fair.
H. Todd, Salisbury Water Co., Salisbury	April 12	Aerobic 51	None in 1 or 50 c. c.	Good.
News Office, Salisbury Water Co., Salisbury	April 12	Aerobic 41	None in 1 or 50 c. c.	Good.
Pump Station, Salisbury Water Co., Salisbury	April 12	Aerobic 145	None in 1 or 50 c. c.	Good.
Mt. Washington Public Supply, Baltimore county	May 23	Aerobic 32	None in 50 c. c.	Good.
Truitt's Pharmacy, Roland Park, Baltimore county	May 23	Aerobic 320	None in 1 or 50 c. c.	Fair.
Highlandtown Public Supply, Baltimore county	May 24	Aerobic 1,272	Present in 1 c. c.	Bad.
Tracey's Hotel, Towson Public Supply, Baltimore Co	May 24	Aerobic 110	None in 1 c. c.	Good.
Sparrow's Point Public Supply, Baltimore county	May 25	Aerobic 27	None in 1 or 50 c. c.	Good.
Catonsville Public Supply, Baltimore county	May 28	Plate overgrown	None in 1 or 50 c. c.	Good.
Union Bridge Public Supply, Carroll county	June 1	Plate overgrown	None in 50 c. c.	Good.
New Windsor Public Supply, Carroll county	June 1	Aerobic 64	None in 1 or 50 c. c.	Good.

Westminster Public Supply, Carroll county	June	2	Aerobic	10	None in 1 or 50 c. c.	Good
Taneytown Public Supply, Carroll county...... ..	June	2	Plate overgrown		None in 1 or 50 c. c.	Good.
Annapolis Public Supply, Anne Arundel county...	June	4	Aerobic	322	None in 1 or 50 c. c.	Good.
Havre de Grace Public Supply, Harford county....	June	5	Aerobic	59	None in 1 or 50 c. c.	Good.
Elkton Public Supply, Cecil county.............	June	5	Aerobic	83	None in 50 c. c.	Good.
Centreville Public Supply	June	9	Aerobic	4,380	None in 1 or 50 c. c.	....
Chestertown Public Supply......	June	9	Aerobic	492	None in 1 or 50 c. c.	Fair.
Easton Public Supply...................... ...	June	9	Aerobic	7,560	None in 1 or 50 c. c.	....
Cambridge Public Supply........................	June	11	Aerobic	6	None in 1 or 50 c. c.	Good.
Congress Hall Hotel, Ocean City.......	June	20	Aerobic	8	None in 1 or 50 c. c.	Good.
Atlantic Hotel, Ocean City	June	20	Aerobic	6	None in 1 or 50 c. c.	Good.
Salisbury Public Supply.	June	20	Aerobic	9	None in 1 or 50 c. c.	Good.
Pocomoke City Public Supply.	June	21	Aerobic	0	None in 1 or 50 c. c.	Good.
Princess Anne Public Supply..........	June	21	Plate overgrown		Present in 1 c. c.	Very suspicious.
Crisfield Public Supply........................	June	22	Plate overgrown		None in 1 or 50 c. c.	Good.
Mountain Lake Park	June	26	Aerobic	25	None in 1 or 50 c. c.	Good.
Lonaconing Public Supply.......................	June	27	Aerobic	539	None in 1 or 50 c. c.	Good.
Savage Mountain, Frostburg.....................	June	27	Aerobic	32	None in 1 or 50 c. c.	Good.
Cumberland Public Supply	June	28	Aerobic	3,540	Present in 50 c. c.	Very bad.
Hagerstown Public Supply.......................	June	28	Aerobic	93	None in 1 or 50 c. c.	Good.
Frederick Public Supply	June	—	Aerobic	49	None in 1 or 50 c. c.	Good.
Mrs. Henry Keene, Octagon Cottage, Lutherville...	July	23	Aerobic	540	None in 1 or 50 c. c.	Fair.
Mrs. Henry Keene, Octagon Cottage, Lutherville (well)	July	23	Aerobic	76	None in 1 or 50 c. c.	Good.
Mrs. Henry Keene, Octagon Cottage, Lutherville (ice)	July	23	Aerobic	11	None in 1 c. c.	Good.
Port Deposit Public Supply	July	27	Aerobic	122	None in 1 or 50 c. c.	Good.
Perryville Public Supply.............	July	27	Aerobic	5	None in 1 or 50 c. c.	Good.
Thurmont Public Supply.	July	31	Aerobic	58	None in 1 or 50 c. c.	Good.
Emmitsburg Public Supply...............	July	31	Aerobic	3,600	None in 1 or 50 c. c.	Bad.
Mr. Chambers, Lutherville (well)	August	7	Aerobic	522	None in 1 c. c.	Fair.
Chas Tilley, Lutherville.	August	11	Aerobic	1,400	None in 1 c. c.	Suspicious.
Mrs. Loney, Lutherville.........................	August	11	Aerobic	32	None in 1 or 50 c. c.	Good.
Perryville Public Supply	August	15	Aerobic	228	Present in 1 c. c.	Bad.
Providence Paper Mills (well No. 1)...............	August	15	Aerobic	198	None in 1 c. c.	Good.
Providence Paper Mills (well No. 2)...............	August	15	Aerobic	361	None in 1 or 50 c. c.	Good.
Providence Paper Mills (well No. 3).....	August	15	Aerobic	1,200	None in 1 c. c.	Bad.

TABULAR REPORT OF WATER EXAMINATIONS—Continued.

TAP, STREAM, WELL OR SPRING.	DATE.		COLONIES PER C. C.		COLON BACILLUS.	QUALITY.
Providence Paper Mills (well No. 4)	August	15	Aerobic	1,920	None in 1 c. c.	Bad.
Dr. Smith, Jarrettsville (spring water)	August	—			None in 1 or 50 c. c.	
Dr. Smith, Jarrettsville (well water)	August	—			None in 1 c. c.	
Geo. Black, Lutherville	August	18	Aerobic	414	None in 1 c. c.	Fair.
Mr. Sexton, Mt. Washington	August	20	Aerobic	53	None in 1 c. c.	Good.
L. Addison, Woodstock	August	20	Aerobic	63	None in 1 c. c.	Good.
J, Pauls, Woodstock	August	20	Aerobic	456	None in 1 c. c.	Fair.
H. Phillip, Hillen road (No. 1)	August	24	Aerobic	1,560	None in 1 c. c.	Suspicious.
H. Phillip, Hillen road (No. 2)	August	24	Aerobic	1,440	None in 1 c. c.	Suspicious.
Hospital for Crippled Children, Blue Ridge Summit.	August	—			None in 1 c. c.	
Julius Owens, Elk Ridge (No. 1)	August	27	Aerobic	2,760	Present 1 and 50 c. c.	Bad.
Julius Owens, Elk Ridge (No. 2)	August	27	Aerobic	792	None in 1 or 50 c. c.	Suspicious.
Murray Hagerty, Elk Ridge	August	27	Aerobic	1,764	Present in 1 c. c.	Bad.
Robert Coates, Elk Ridge	August	27	Aerobic	450	Present in 1 c. c.	Bad.
Alex. Snowden, Elk Ridge	August	27	Aerobic	630	Present in 1 c. c.	Bad.
Aug. Wahan, Elk Ridge	August	27	Aerobic	52	Present in 1 c. c.	Bad.
J. W. Gordy, Snow Hill (No. 1)	August	30	Aerobic	85	None in 1 or 50 c. c.	Good.
J. W. Gordy, Snow Hill (No. 2)	August	30	Aerobic	50	None in 1 or 50 c. c.	Good.
J. W. Gordy, Snow Hill (No. 3)	August	30	Aerobic	70	None in 1 or 50 c. c.	Good.
J. W. Gordy, Snow Hill (No. 4)	August	30	Aerobic	830	None in 1 or 50 c. c.	Fair.
Levin Carter, Snow Hill	August	30	Aerobic	258	None in 1 or 50 c. c.	Good.
Harry Colborne, Snow Hill	August	30	Aerobic	516	None in 1 or 50 c. c.	Fair.
Wm. Dickerson, Snow Hill	August	30	Aerobic	140	None in 1 or 50 c. c.	Good.
Bertha Parsons, Snow Hill	August	30	Aerobic	340	None in 1 or 50 c. c.	Fair.
Gwynn Oak House, Gwynn Oak Park	September	8	Aerobic	1,620	Present in 1 and 50 c. c.	Bad.
Builtmore, Blue Ridge Summit, Pa. (No. 1)	September	—			None in 1 c. c.	
Builtmore, Blue Ridge Summit, Pa. (No. 2)	September	—			None in 1 c. c.	
Builtmore, Blue Ridge Summit, Pa. (No. 3)	September	—			None in 1 c. c.	
Builtmore, Blue Ridge Summit, Pa. (No. 4)	September	—			Present in 1 c. c.	Bad.

Water Department (sample No. 1)............	September	13	Aerobic	640	Present in 50 c. c.	Bad.
Water Department (sample No. 2)..................	September	13	Aerobic	9,296	Present in 1 c. c.	Very bad.
Water Department (sample No. 3)................	September	13	Aerobic	6,740	Present in 50 c. c.	Very bad.
David Donavan, Woodstock (spring)..............	September	25	Aerobic	78	Present in 50 c. c.	Bad.
Mrs. Donavan, Woodstock.......................	September	25	Aerobic	636	Present in 1 and 50 c. c.	Bad.
Edward Benzinger, Woodstock....................	September	25	Aerobic	576	Present in 50 c. c.	Bad.
Mr. Hormick, Roland Park......................	October	12	Aerobic	46	None in 1 or 50 c. c.	Good.
Elkton Public Supply..........................	October	24	Aerobic	148	Suspicious in 1 & 50 c. c.	Suspicious.
Thos. Robinson, Elkton.........................	October	24	Aerobic	442	None in 1 or 50 c. c.	Fair.
Edward Russell, Elkton.........................	October	24	Aerobic	182	Present in 50 c. c.	Bad.
Chas Ayers, Elkton.............................	October	24	Aerobic	387	Present in 1 c. c.	Bad.
Chas Ayers, Elkton.............................	October	25	Aerobic	——	Present in 1 c. c.	Bad.
Dr. W. S Richardson, Williamsport..............	October	30	Aerobic	——	Present in 1 c. c.	Bad.
Wm. M. Clelland, Bengies.......................	November	8	Aerobic	391	Present in 50 c. c.	Bad.
H. Brinkman, Bengies...........................	November	8	Aerobic	870	Present in 1 and 50 c. c.	Bad.
P. W. & B. Railroad, John Pielert, Agent, Bengies..	November	8	Aerobic	7,680	None in 1 and 50 c. c.	Bad.
John P. Jones, Bengies.........................	November	8	Aerobic	485	Suspicious in 1 & 50 c. c	Suspicious.
John P. Jones, Bengies.........................	November	8	Aerobic	152	None in 50 c. c.	Good.
John Hughes, Middle River......................	November	8	Aerobic	264	None in 50 c. c.	Good.
Dr. Harrison, Middle River.....................	November	8	Aerobic	249	None in 1 and 50 c. c.	Good.
P. W. & B. Railroad, Joseph Jeffres, Agent, Middle River................................	November	8	Aerobic	1,020	None in 1 and 50 c. c.	Suspicious.
Orem's School, near Middle River...............	November	8	Aerobic	226	Present in 50 c. c.	Bad.
A. Hughes, Bengies.............................	November	8	Aerobic	254	None in 1 and 50 c. c	Good.
Dr. J. M. Stone, near Princess Anne............	November	12	Aerobic	——	Present in 1 c c.	....
J. R Woods, Lutherville........................	December	18	Aerobic	350	None in 1 or 50 c. c.	Fair
Mrs. H. Mace, Rossville	January	2	Aerobic	155	None in 1 or 50 c. c.	Good

Respectfully submitted,

WILLIAM R. STOKES, M. D.,
Bacteriologist to the State Board of Health.

LIST OF BACTERIOLOGICAL SUB-STATIONS.

Allegany County.

Dr. J. M. Spear, Cumberland.
G. E. Pearce's Drug Company, Frostburg.

Anne Arundel County.

Dr. Wm. S. Welch, Annapolis.

Baltimore County.

Farrow Bros., North avenue and Tenth street, Walbrook.
S. M. Lucas, Mt. Washington.
J. A. Carnes, Cockeysville.
J. S. Woodward, Sparrows Point.
T. Ross Payne, Corbett.
Massenburg & Co., Towson.
Gibson Pharmacy, Mt. Winans.
Truitt's Pharmacy, Roland Park.

Caroline County.

Smith's Pharmacy, Ridgely.
Dr. George W. Betson, Greensboro.
Dr. J. L. Noble, Preston.

Carroll County.

Dr. R. F. Wells, Hampstead.
Dr. John S. Matthias, Westminster.
Dr. Robert S. McKinney, Taneytown.
Arthur P. Gimpel, Sykesville.
Chas. J. H. Ganter, Manchester.
L. E. Stauffer, Union Bridge.
W. Scott Zepp, Westminster.

Cecil County.

H. C. Wells, Elkton.
H. R. Cameron, Port Deposit.

Charles County.

W. S. Latus, Wicomico.
Henry G. Robertson, La Plata.
Wm. L. Hicks, Waldorf.
Andrew L. McDaniel, Pomonkey.

Dorchester County.

Dr. John Mace, Cambridge.
DeReeves Pharmacy, Cambridge.

Frederick County.

S. Schley & Bro., Frederick City.
H. D. Barnett & Co., Brunswick.

Garrett County.

J. E. Harnett, Oakland.

Harford County.

E. Dell & Co., Aberdeen.
E. A. Zeitler, Havre de Grace.
Richardson's Drug Store, Belair.
Dr. F. P. Smithson, Forest Hill.

Howard County.

J. Martin, Ellicott City.
T. A. Gilmer, Elkridge.

Kent County.

C. F. Stam's Pharmacy, Chestertown.

Montgomery County.

Dr. C. Farquhar, Olney.
Dr. Wm. L. Lewis, Kensington.

Prince George's County.

Dr. M. D. Humes, Upper Marlboro.
Alfred H. Wells, Hyattsville.

Queen Anne's County.

Foreman's Drug Store, Centreville.

Somerset County.

J. F. Somers' Drug Store, Crisfield.
Dr. Martin W. Goldsborough, Princess Anne.

Talbot County.

T. A. Councell, Easton.

Washington County.

D. C. Auginbaugh's Pharmacy. Hagerstown.
J. A. West, Hancock.
Schindel, Hagerstown.
Wareham's Pharmacy, Hagerstown.
John E. Anderson, Clearspring.

Wicomico County.

C. R. Truitt's Drug Store, Salisbury.

Worcester County.

Lloyd, Blaine & Co., Pocomoke City.
Dirickson's Pharmacy, Berlin.

CLERICAL REPORT.

Ordinary correspondence (letters), . . .	2,564
Mimeograph letters, ...	1,552
Circulars, announcements, programmes, . .	10,090
Birth certificates filed, ...	6,855
Death certificates filed, ...	7,509
Death certificates copied on register, . . .	3,301
Made out and sent quarterly vouchers for registration of births and deaths for the half year ending September 30, 1900, to the local registrars numbering, ...	43
Reports of chemical examinations, . . .	328

Respectfully submitted,

M. L. Rullman, *Clerk.*

INSPECTION OF FOOD.

During the year 1900 the board has paid particular attention to the inspection of beef cattle and dressed meats. In 1899 an inspection of the slaughter houses in the State was reported, and showed a variety of abuses more or less dangerous to human health, and creating easily avoidable nuisances, which affect the comfort of many communities.

Systematic examination of cattle and dressed beef offered for sale to the people of the State has discovered additional sources of danger to public health and disgusting frauds upon consumers of meat. The reports of our inspectors could hardly be recast into a story which would not seem sensational, for the facts, considered quite apart from their relations to public health, create feelings of disgust.

Dr. Jose Hirsh, a practical pathologist, was engaged to make a study of the conditions to be observed at Claremont stock yards and in the Baltimore Butchers' Abattoir. His observations extended over a period of three months, and are printed herewith.

Most of the beef cattle shipped to Baltimore arrive at Claremont. Previous reports of the State Board of Health will show that a single inspector has attempted to look over the thousands of animals arriving there weekly, and we have repeatedly pointed out the mathematical absurdity of his reported examinations of so many animals. Such animals as show gross external evidence of disease, and such as are unable to keep up with the procession, are the only animals likely to attract the attention of the inspector, and unscrupulous dealers are able to conceal a great majority of them by having the inspector watched, and keeping such animals out of right. It is quite easy to circumvent any single inspector in such an extensive maze of pens and alleyways. One inspector cannot even inflict appreciable loss upon the dealers.

There is a class of dealers who make a specialty of "thin" cows and "still" cows. "Thin" cows are the animals which have from age, disease, or injury become unprofitable to their owners. They are bought up by country drovers and shipped to Baltimore in large numbers. Among them are many cows far advanced in tuberculosis. "Still" cows are the animals which have been fed upon distillery swill. They convert the waste of distilleries into milk, and aside from the bad quality of their food, are kept under bad hygienic conditions. When the "still" cow can no longer convert slops into milk, she is no longer profitable to her owner. and is therefore sold for beef. Many of the "still" cows are tuberculous, and it is doubtful if any of them are fit for human food. The effects of a long continued diet of distillery swill produces pathological changes in all the tissues and organs of the body which, while they do not render the meat capable of producing definite disease, do seriously impair its quality as food.

It would not be just to condemn all "still" cows and "thin" cows to the fertilizer tank, but the great proportion of tuberculous cattle among them certainly seems to require that they should be inspected rigorously. It is impossible to recognize with certainty the signs of tuberculosis by inspection of the live animals, and it is therefore necessary to follow them to the abattoir.

This we have done, with the result that a large number of tuberculous animals have been seized and tanked. We have thus inflicted wholesome losses upon some of the dealers and butchers. The butchers finding themselves frequently mulcted, endeavored to protect themselves by requiring the dealers to guarantee that the slaughtered animal would pass inspection. They were able to enforce this demand upon the dealers, because it is not customary to consider the sale of an animal complete, and payment due, until the carcass has been taken from the refrigerator. Practically, therefore, our seizures occurred while the dealer was yet the owner. The dealers in turn advised the drovers to be more careful in the purchase of poor animals, and so passed the responsibility back one step. The drovers, so we were informed, would hand back the responsibility to the farmer, requiring of him a guarantee against loss through confiscation by the State Board of Health. We were promised that the interests of the farmers would shortly be aroused against us, but nothing of that sort has yet appeared.

Most of our inspections of dressed meat have been made at Baltimore Butchers' Abattoir. This is controlled by a large corporation operating in many large cities. The conditions and practices to be observed there are no worse than may be found elsewhere in Maryland; indeed, the greater part of the best beef sold in Baltimore is slaughtered and stored at this place, while proportionately little of the worst meat is dressed there.

There is a considerable class of butchers, known to the trade as "pudding butchers," who handle only the worst stock. So large an abattoir does not attract the worst representatives of this class, because their foul business is more safely pursued in smaller places. Most of the very bad dressed beef found at the Baltimore Butchers' Abattoir is the property of drovers and dealers. The comparatively few animals that are too poor or too sick to find sale in the stock-yards, and too feeble to be driven away to another slaughter-house, are butchered here. and their carcasses are kept in the refrigerator for sale to the "pudding butcher."

The abattoir company has a very broad rule that every animal brought there for slaughter must be alive when it reaches the killing floor. An animal too ill or too badly injured to walk may be hauled to the killing floor in a wagon. It is sometimes difficult and occasionally impossible to decide whether the disease or the butcher was in first at the death, and it is natural to suppose that a majority at least of such doubts are resolved in favor of the owner of the animal.

The inspections of the State Board of Health have had the effect of driving some of this traffic away from the Baltimore Butchers' Abattoir, though it is said that some such work is yet done at unseasonable hours. It may be remarked that the abattoir company is not sorry to be rid of such patrons, and that the best class of butchers are well satisfied to have inspections pursued rigorously.

It is quite probable that equal abuses would be uncovered if the business of slaughtering hogs and sheep were as carefully observed, but this we have been unable to do for lack of means.

In order to make the inspection of animals and meat effective, we should need at least half a dozen men, of whom one should be a trained veterinary pathologist. One might reasonably hope that this force could be reduced after two or three years of steady work.

Report of a Special Investigation of Abattoirs in and near Baltimore.

January 3, 1900.

DR. JOHN S. FULTON,
Secretary State Board of Health, Baltimore, Md.

DEAR SIR: I herewith submit a report covering my work on the inspection of meats during the months of August, September, October, November and December, 1900.

My work includes numerous visits to the stock-yards, public and private, where the methods of killing, dressing, and the handling of cattle were observed, and subsequent microscopical examinations of all suspicious material were made.

A large amount of material was also sent to me by the State and City inspectors of meat in order to determine whether such meat was fit for human food. The carcasses of cattle from which the specimens were obtained were tagged by the inspector, and put aside in the refrigerator until definite report could be made upon the quality of the meat. Microscopical examinations were made, after which the carcass was either condemned or allowed to be put on the market. In many cases a superficial examination of organs and meat was sufficient to condemn them at once.

The value of scientific examination of meat is of importance both to the butcher and to the public. Several specimens of slight post-mortem changes were sent to me as diseased meat, which it would have been unfair to condemn; and, on the other hand, extensively diseased specimens were recognized only by a careful microscopical study. In glancing over previous reports of the Maryland State Board of Health, it is obvious that the diseased conditions were observed only in a general and superficial manner. For instance, three to four times as many tubercular livers as lungs are recorded. Tuberculosis should appear in the lungs at least four times as often as in the livers, and the figures given indicate that four times as much tuberculous meat was not recognized as such by the inspector.

There is near this city one public slaughter-house, the Union Abattoir. A large part of my time was spent at this place, from which also a large part of my material was obtained. On the average, about 5,000 cattle are received here per week. The inspection of such a large number of cattle is a great task, and would easily require the constant attention of a number of inspectors. I have satisfied myself that it is impossible for the one inspector at the disposal of the State Board of Health to make more than a most superficial examination, even were his entire time spent at this one stock-yard. On certain days of the week many cattle are slaughtered, and while the inspector is at one part of the building, it is perfectly feasible in other portions of the building for diseased organs, and even entire carcasses to be secreted, and later put on the market for consumption. I am informed that the inspector's duties frequently call him to various parts of the State, when there remains little or no hindrance to the disposal of unsound meat.

Besides this public slaughter-house there are within the limits of Baltimore city two hundred and forty private slaughter-houses. These are supposed to be inspected by the one City Meat Inspector, whose duties also include the examination of meats, game, poultry, fish, vegetables, fruit, etc., at the city markets, at the wharves, and at the railroad stations —a task which a dozen men could but poorly accomplish.

From the nature of things every private slaughter-house may be considered a center of infection, and since a private butcher would scarcely be expected to kill at the convenience of the inspector, what happens at the more unscrupulous of these places can be left only to the imagination. Some of these places are situated upon streams whose waters become contaminated by the offal and filth of the slaughter-house. Most of them are infested with rats, which readily become infested with trichinosis, and in turn infect other animals (hogs) which feed on their dead bodies. In turn, man becomes infected through the consumption of the flesh of an infected pig. Too much cannot be said in condemnation of private slaughter-houses, and their complete abolition in cities must be insisted upon. In this respect Baltimore stands far behind other cities.

On account of the limited time at my disposal, the number of diseased cattle which I was enabled to examine was not great, and I am certain that many cases, as extensively diseased as these I report, escaped observation entirely. For this reason I will refrain from giving the numbers of cattle or specimens which I examined, for although large, they would give no index to the total number of diseased cattle entering our markets. Although on many occasions several successive hours were spent at the yards, but few cattle could be examined, especially when being slaughtered, as it was necessary to watch a suspected animal from the time it was driven into the killing pen until it was dressed, if one hoped to obtain any of the organs for microscopical study. Diseased livers, lungs, spleens, etc., were occasionally noted hanging about the slaughtering rooms, and often by mere chance the inspector found these, and by condemning them prevented their sale and consumption as food.

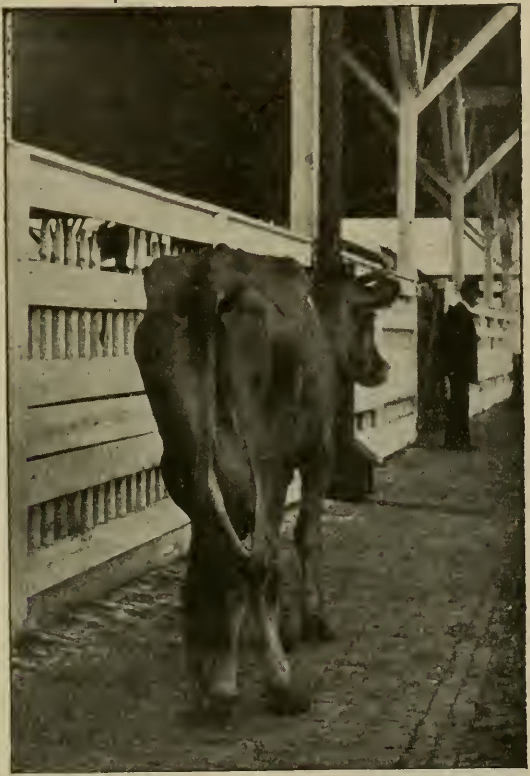
Frequent visits were made to the refrigerating rooms to inspect the meat, and many specimens were taken for study. As a result several carcasses were condemned. Some of the sides of beef showed the effects of ante-mortem bruises, and microscopical examination showed inflammatory, and other degenerations.

The accompanying photographs will convey some idea of one variety of cattle of which we saw quite a number. It does not require a trained veterinarian to detect that some of them are extensively diseased and entirely unfit for food. A good beef should dress at 600-700 pounds; some of these weighed less than 250 pounds.

The diseases with which cattle are affected, and which may in turn be communicated to man are numerous, the chief of which are tuberculosis, actinomycosis, tape-worm, hydatid disease, trichinosis.

The pig is infested with two parasites which are of importance to man; both of these have their habitat in the flesh. The one, *Cysticercus Cellulosae*, gives rise to the common tape-worm in man; the other, *Trichina Spiralis*, gives rise in man to trichinosis, which is often fatal. Both of these diseases are readily recognizable by microscopical examination, and consequently both of them could easily be prevented if a systematic examination of pork were made.

Hydatid disease affects sheep and cattle, as well as dogs, (their normal host); occasionally the disease is found in man, being transmitted to him from dogs, which in turn are usually infected by feeding on the infected offal about slaughterhouses.



SAUSAGE AND PUDDING.

A "thin cow;" so thin that she had to be lifted to her feet to be photographed. Note the large tumor.

Our chief studies were directed to two diseases, tuberculosis and actinomycosis. That tuberculosis in cattle is a menace to public health few will deny; that the products of tubercular cattle—milk, cheese and butter—may contain virulent tubercle bacilli is highly probable; that the tuberculosis of cattle and man are due to one and the same organism but comparatively few doubt, and that tuberculosis of the intestinal tract may be acquired by drinking the milk of tubercular cows has unfortunately been conclusively proven. It is only necessary to consult the reports of the Royal Commission on Tuberculosis of England to see that while general tuberculosis in the last 25 years decreased 39 per cent., intestinal tuberculosis has decreased but 8.5 per cent. If infants derive tubercular infection only from their associates and elders, it is only fair to expect the diminution in prevalence among children to be in proportion to that among their elders. Of course there are other and more frequent sources of infection than cattle, but that is no reason why this one should not be removed. Until some measures are taken to check the disease among cattle, the number of cases will constantly increase—a fact not only of sanitary importanec, but also of monetary importance to stockraisers.

Numerous cases of tubercular infection of cattle were observed at the stock-yards. Animals almost too weak to

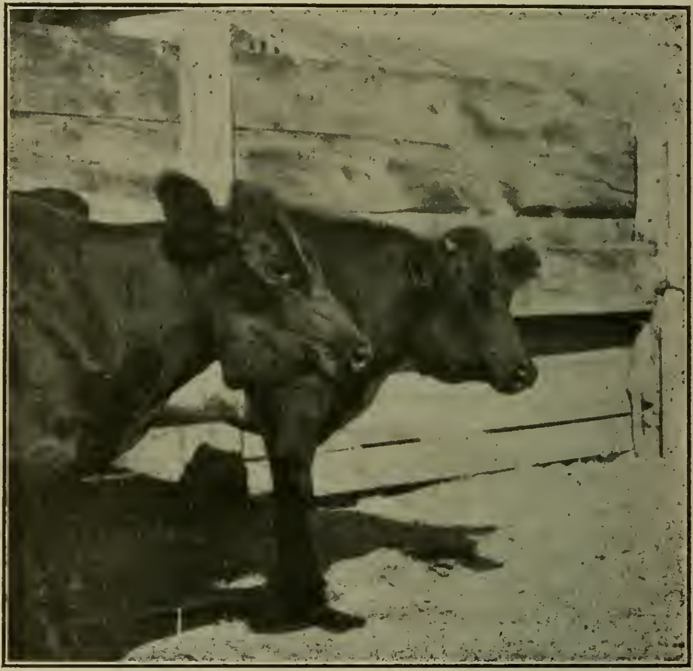
SAUSAGE AND PUDDING. A "bonerack." Tuberculosis.

stand, wheezing, with mucus discharging from the nostrils, were seen in the pens ready for slaughter. Specimens of lungs of cows were obtained for microscopical study. Various stages of tubercular degeneration and cavity formation were noted, and by proper staining of sections tubercle bacalli were seen scattered through the specimens. Meat with tubercular nodules was also obtained, in one cow recently under observation it was almost impossible to obtain a specimen from any part of the body or any of the organs which did not show tubercles. Many of these tubercular cattle were condemned by the inspector, but these were manifestly but a small part of the whole number of tuberculous animals slaughtered at the abattoir.

The question whether tuberculosis can be transmitted to man by meat of tubercular cattle is an important one. It may safely be said that meat which contains tubercle in any stage, and in which the tubercle bacilli are found, ought to be condemmed as unfit for human food, even though we are not prepared to say that its consumption would give rise to the disease, on the general grounds that the flesh is so deteriorated as to possess no longer the nature, qualities or properties of wholesome, nutritious meat.

Actinomycosis. This disease is due to a fungus, the ray fungus, that grows on vegetation, especially on barley, rye, and certain varieties of grasses. It gets into the mucous membrane of the mouth, and develops there; it may also reach the walls of the stomach and the lungs. It forms large tumors, usually in the jaw, which frequently suppurate. Animals affected with this disease emaciate rapidly, and readily communicate the disease to other animals with which they come in intimate contact. Numerous cases of actinomycosis of men whose business is was to look after cattle are recorded. While it is doubtful if the disease can be transmitted to man by eating the flesh of infected animals, still for the same reason that tubercular cattle are unfit for food. These cattle when extensively infected should be condemned. I believe the number of actinomycotic cattle which come into our market has decreased in recent years, yet the State inspector within a periods of a few weeks observed six cases at one slaughter-house. I had the opportunity to examine the heads of all of these animals, and in the pus obtained from the jaw found the ray fungas. These animals presented various stages of infection, some mild, others very extensive.

All of them were markedly emaciated. In one case the abscess had broken through the skin, and presented an open discharging surface. Another animal showed, besides a large abscess in its jaw. numerous smaller abscesses over its head, doubtless secondary infections. All of these animals were condemned and tanked by the State Board of Health.



CHEAP STEAK AND ROASTS.

Actinomycosis, or Lump-Jaw.

I did not have an opportunity to examine the flesh of swine for trichinæ, but that they could be found, if looked for, is beyond doubt. The United States' government demands that all carcasses sent abroad shall be carefully examined, both macroscopically and microscopically for trichinæ, but there is no such requirement for similar products intended for home consumption.

One other point worthy of mention is the use of dye stuffs to color meats, particularly sausage. I am not prepared to state the exact nature of the dye used, nor am I sure that its use is in any way injurious to health, yet it is in direct defiance of the laws of Maryland relating to public health.

There are sufficient laws in Maryland covering all the points essential to the efficient inspection of meats. That they are not carried out is due to the lack of inspectors. Some of the neighboring States to Maryland carry on a more rigid inspection of cattle than we at present are able to do. What is the result? Diseased cattle which are driven from these markets find a welcome in our city and State. We are in danger of becoming the dumping grounds for the refuse cattle of other States. More than one butcher makes a practice of handling poor and diseased animals to place them on the local block, because he can buy them cheaper than healthy animals, and the customer cannot tell the difference between good and poor meat.

I would therefore recommend that the number of meat inspectors be increased, and that a competent pathologist be appointed to carry on scientific investigation, and to act in consultation with the inspectors.

It is clearly desirable to minimize the number of localities from which infection may spread, consequently all private slaughter-houses should be abolished. If all slaughtering is done at one place it will be comparatively easy to control the class of animals used.

In concluding this report, I will call your attention to the laws now enforced in Leipzig, Germany, where the inspection of meat is thoroughly carried out.

1. No private slaughter-houses exist.

2. All slaughtering is carried on in the public slaughter-houses under sanitary conditions.

3. All meats brought to the town have to be taken to the central office for inspection before being sold.

4. Microscopical and other examinations of meat are carried out.

5. All meats passed as sound are stamped in several places with the official stamp, showing that it is fit for human food.

6. Bad meats are taken away and destroyed by the municipality.

The following is a list of specimens studied:

Actinomycosis, 6—The heads of six cattle affected with this disease were examined. Cultures from the pus were made, and sections of the tissue were studied microscopically.

Tuberculosis—Lungs, 19; liver, 2; general tuberculosis, 1—total, 22.

Abscess of liver, 3; fatty degeneration, 4—total, 7.

Bacteriological examinations showed—Straplococcus, 1; straphylococcus, 1—total, 2.

Inflammation of muscle, 6; inflammation of kidney, 1; congestion of spleen, 4—total, 11.

Normal lungs, 20; normal liver, 7; normal kidneys, 5; normal muscle, 10; normal spleen, 4—total, 46.

Total specimens worked up in laboratory, 92.

Respectfully submitted,

Jose L. Hirsh, M. D.

An Inquiry into the Role of the Domestic Animals in the Causation of Typhoid Fever.

By Wm. Royal Stokes, M. D., and John S. Fulton, M. D.

Read at the 28th Annual Session of the American Public Health Association, Indianapolis, October, 1900.

The study of house epidemics of typhoid fever in farming communities quite often illustrates certain defects of our knowledge as to the causation of typhoid in general.

The occurrence of a series of typhoid cases in an isolated farm-house is poorly explained by the detection of colon bacillus in a well. Here direct infection of the water supply by human excrement may be excluded, and the theory that the living typhoid bacilli may traverse many feet of soil lays a heavy tax upon one's reasonable faith in natural barriers. We assume that by whatever route the colon bacillus has reached a well, by the same route the typhoid bacillus may travel. But when we attempt to retrace the path of the colon bacillus from a farm well the reasonable probabilities lead seldom to the bodies of men, and often to the bodies of animals, when we must either return to follow some more doubtful clue, or else confront the hypothesis that the intestines of an animal were in the route traversed by the typhoid bacillus.

It seems worth while, then, to inquire whether the typhoid bacillus can pass alive and virulent through the intestines of animals. If so, the very wide and nearly uniform distribution of typhoid fever in this country will have been explained better than on the theory that human excretions alone furnish the seed, and we shall recognize the need of precautions not heretofore suggested.

If, on the other hand, it is found that the typhoid bacillus cannot survive in the bowels of animals, we shall know that the prevention of typhoid fever is to be accomplished by the destruction of infectious material thrown off by man alone.

The belief that animals may serve as hosts of the typhoid bacillus, and may pass on the infection to man, has abundant support in analogy, *e. g.*. anthrax, rabies, glanders, vaccinia, plague, malaria, tuberculosis, actinomycosis, filariasis, trichinosis, and a considerable list of grosser parasitic affections.

It was formerly believed that animals suffered with typhoid. Roberts in 1889 reported an epidemic among dogs in a town in India. The symptoms were continued fever, diarrhœa, and emaciation (*Indian Medical Gazette*). In many postmortems he found enlarged spleens, mesenteric glands inflamed and swollen, Peyer's patches swollen, large oval ulcers in the ileum, etc.

Serres (*La Salute Publica*, 1889, Vol. II, page 380) observed an outbreak of what he regarded as typhoid fever among the monkeys at the Museum of Natural Sciences in Paris, and says that he had previously seen the disease in monkeys, dogs and cats.

An outbreak of typhoid at Kloten (quoted in Albutt, Vol. I) in Switzerland arose from a young man who was believed to have gotten his infection by eating the meat of a calf sick with typhoid fever.

Allen of Pietermaritzburg (*Notter and Firth's Hygiene*) saw cases of typhoid fever which he believed were caused by the milk of cows suffering with typhoid fever. He thought that he excluded other sources of infection. Power made similar observations.

Experimental research has apparently never included the detection of typhoid fever bacilli in the stools of animals, though the immunity of animals to typhoid fever has been well-nigh proven. Murchison in 1867 fed typhoid stools to pigs, with no results. Klein in 1975 repeated these experiments upon various domestic animals, and also fed typhoid stools to monkeys after setting up a diarrhœa with croton oil. Klein's results, like Murchison's, were negative.

Birch-Hirschfeld reported that by feeding typhoid stools to rabbits he produced fever, diarrhœa, and emaciation, and found at autopsy hypertrophy of the spleen and intestinal glands, and in one or two instances ulceration. By way of control he fed other animals with non-specific diarrhœal evacuations, and produced no such results. Bahrdt (*Arch. d. Heilkunde*, 1876) in 1876 failed to confirm the results of Birch-Hirschfeld. Motschutkovsky, employing typhoid blood by inoculation, both in men and animals, got no results.

Klebs and Chomjakov, using both the stools and cultures of the bacillus, by feeding and by intraperitoneal and subcutaneous injection, obtained practically negative results, though some animals died with subnormal temperature.

Gaffky in 1884 made a long and careful series of experiments with pure cultures injected subcutaneously and into the peritoneal cavity, and by feeding, with a view to determining whether characteristic results would follow. No such results were obtained.

E. Fraenkel and Simmonds (*Die Etiolog. Bedeut d. typhus bacillus*, Hamburg, 1886) injected pure cultures of typhoid bacilli into the peritoneal cavity of thirty-five mice and killed twenty-seven. Five rabbits were injected in the intestine, five subcutaneously and one in the lung. None of these died. Of twenty rabbits injected intraperitoneally, two died; of forty-six injected in the ear vein, twenty died. The typhoid bacillus was recovered from the spleen in all the fatal cases. A. Fraenkel (*Z. Lehre v. d. path. Eigenschaften des typhus bacillus. Centralbl. f. Klin. Med.*, 1886, No. 10) introduced the bacilli into the duodenum, obtaining positive results in seven out of fourteen guinea-pigs. These animals died from three to seven days after the experiment, and the bacillus was found in the spleen, but not in the walls of the small intestine. The bacillus was not recovered from the blood.

Michael (*Fortsch. d. Med.*, 1886, Vol. II.), Fodor (*Deut. med. Wochen.*, 1886, No. 36), and Seitz (*Bact. Stud. z. typhus etiologie Muncheu*, 1886), confirmed these general results. Up to this point it would seem doubtful whether the typhoid bacillus has any sort of pathogenicity for the animals experimented upon. Later experiments go to show that while no animal seems capable of having typhoid fever, normal animals may sometimes be killed by cultures of typhoid, and the bacillus may be recovered post-mortem, while a majority of animals, by measures designed either to diminish the resistance of the animals or to increase the virulence of the germ, may be rendered susceptible to fatal typhoid intoxication.

Thus, after rendering the stomach contents alkaline, and stopping peristalsis by opium, Koch and Seitz found that a dose of 10 c. c. of bouillon culture proved fatal to guinea-pigs in more than half the cases.

Rachford (*Med. News*, 1889, LV, 453) gave rabbits bicarbonate of soda by the stomach, and an intraperitoneal dose of morphia, after which he poured typhoid cultures into the stomach. Ten of them died. He believed that one rabbit died of typhoid fever on the thirteenth day. The pathological findings were characteristic—enlarged spleen, intestinal ulceration, etc. Typhoid bacilli were recovered from the spleen.

Sirotinin (*Zeits. f. Hygiene*, Bd. I, Heft 3), and Beumer and Peiper (*ibid.*), repeating the experiment of Koch and Seitz, concluded that the animals were killed by the soluble poisons in the culture media, and that the results were no more specific than those following experiments with cultures of non-pathogenic organisms.

Widal and Chantemesse, by injecting at the same time typhoid cultures under the skin and sterilized streptococcus bouillon into the peritoneal cavity, were able to recover a bacillus of increased virulence, and, repeating the experiment through a series of twenty-five animals, obtained at last a typhoid bacillus which was fatal to mice and guinea-pigs. These animals did not, however, have a disease resembling typhoid, but a septicemia. Sanarelli also claimed to have produced in the bodies of animals a typhoid bacillus of increased virulence by growing it in association with sterilized cultures of colon bacillus and of pyocaneus. In the experiments of Germano and Maurea, who injected mice with 0.5 c. c. of typhoid bouillon, it was found that in those cases which were rapidly fatal there was evidence of proliferation of the bacillus, but in the cases where death occurred after several days the bacilli in the tissues were far less numerous.

Cygnoeus (*Beitrage z. Path. Anat. u. z. Allg. Path.*, Bd. VIII, Heft 3, 1890), in addition to the methods of Chantemesse and Widal, fed typhoid cultures by mouth and injected the duodenum and small bowel through an abdominal wound. Of sixteen rabbits, nine died within eleven days, having fever and progressive weakness. Two rabbits fed by the mouth died in three to five weeks. Bacilli were found in intestines, spleen, kidney and liver. From one rabbit injected in the vein of the ear he recovered typhoid bacillus from the feces. No other find of this sort appears to have been made in all these experiments.

The fatal results following experiments of whatever nature have seemed dependent rather upon the quantity of the culture used, or upon the increased virulence of the germ, than upon its activity within the body. Filtered cultures or dead bacteria may be employed with fatal effect. Pfeiffer destroyed the bacilli on agar stroke cultures by exposure to chloroform vapor, and found that doses of three or four milligrammes of the dead bacteria were fatal to guinea-pigs. Brieger was able to isolate from typhoid cultures a ptomain which was fatal to guinea-pigs.

It is thus seen that the insusceptibility of lower animals to typhoid fever has been almost demonstrated. It does not, however, follow that the bacillus of typhoid fever may not live in the bodies of lower animals. The proof is only that the lower animals react to the typhoid bacillus but rarely, and in a non-specific manner. The typhoid bacillus has been found in the feces of human beings in good health, and, therefore, presumably immune (Remlinger and Schneider.) It is also well known to have survived in the bodies of individuals long after recovery from typhoid fever.

The first requisite for such an inquiry as we propose is a satisfactory selective medium for the growth of the typhoid bacillus. The first successful medium was that devised by Elsner, which, being inoculated with typhoid dejecta, restrained the growth of all the bacteria, except the typhoid bacillus and the bacillus coli communis. In this medium the typhoid colonies are distinguished by their smaller size and slightly different color. Elsner's medium is unsuitable for use in the incubator, since it becomes fluid at 37° C. The development of the colonies at a low temperature is necessarily slow. The colon bacillus appears first, after about twenty-four hours, and typhoid bacillus after forty-eight hours or later. Thus it is likely to happen in plates too thickly inoculated that the colonies of typhoid bacillus become obscured by the faster-growing colon bacillus.

A better medium for obtaining typhoid bacillus from the stools is, as we think, that advised by Hiss and described in the *Journal of Experimental Medicine* for November, 1897. His directions for preparing the medium are as follows: "The medium used for plating contains 10 grammes of agar, 25 grammes of gelatine, 5 grammes of beef extract, 5 grammes of sodium chloride and 10 grammes of glucose. Care should be taken to add the gelatine after the agar is thoroughly melted, so as not to alter this ingredient by prolonged exposure to high temperature. The glucose is added after clearing. The reaction of this medium is most important, and if, as is usually the case, it is too alkaline, it is rendered of the desired reaction by adding the determined amount of normal solution of HCl. The medium should never contain less than 2 per cent. of normal acid."

Hiss lays special stress upon this exact reaction as determined by phenolphthalein, and he says that in such a medium he has been able to obtain pure colonies of the typhoid bacillus from a great many cases of typhoid fever as well as from greatly diluted suspensions of the typhoid bacillus in water. This medium remains semi-solid in the incubator. In twenty-four hours, if any typhoid colonies develop, they will present a typical appearance under a low power of the microscope, and can be easily transferred by the pointed needle to other suitable media.

The typical colonies of the typhoid bacillus are thus described: "As seen under the low power the deep typhoid colonies are small, generally spherical, with a rough, irregular outline, and by transmitted light are of a vitreous-greenish or yellowish-green color. The most characteristic feature consists of the well-defined filamentous outgrowths, ranging from a single thread to a complete fringe around the colony. The young colonies at times are composed solely of threads. The fringing threads generally grow out at right angles to the periphery of the colony, and can be seen by focusing up and down to be decidedly connected with it."

This method seemed useful for recovering the typhoid bacillus from the feces of animals after feeding experiments, but before beginning such investigations we determined to find out whether the medium would make a selective culture of the typhoid bacillus when inoculated with various materials containing this germ.

In order to test the efficacy of this method we first plated out fifteen specimens of urine from typhoid fever patients. From eight of these specimens we obtained numerous colonies of typhoid bacilli, which exactly corresponded to the description given above, and also proved their identity completely by the usual cultural tests for the typhoid bacillus, and by the Widal reaction with known typhoid blood. We also made cultures from twelve typhoid stools, but only obtained colonies of the typhoid-bacillus in two cases. These were typical in all respects, however, and as in most of the cases the disease was well advanced or convalescent, the typhoid bacilli may have been no longer present in the stools. We also made artificial mixtures of the colon and typhoid bacillus, and were always able to recognize and to recover the typhoid organism. Pure cultures of the typhoid bacillus also showed characteristic growth in Hiss' medium, and we identified an organism which was obtained from the gall bladder as the typhoid bacillus by its characteristic appearance in this medium, and proving its identity by all the culture and reaction tests.

From our experience with this medium we were convinced that the typhoid organism, if present, might in a certain proportion of experiments be recovered from the feces of animals. Hiss' medium was, therefore, used in all of our feeding experiments upon animals.

Our first series of animals consisted of two chickens, two white rats and a calf six weeks old. We inoculated a liter flask of bouillon with typhoid bacillus, and allowed it to develop in the thermostat for forty-eight hours. One-half of the bouillon was fed to the calf in its milk, and the other half was mixed up in the grain given to the chickens, and poured upon the bread eaten by white rats. The animals were fed in different cages from those in which they were afterwards confined, in order to eliminate any error from admixture of the infected food with the feces. The feces were collected by introducing a sterile glass tube into the rectum, or simply by using the voided material. The rats were caused to defecate when specimens were wanted by grasping them with long forceps just above the pelvis. A slight squeeze of the abdomen always produced an evacuation. The cages were also thoroughly sterilized between each series of experiments.

The feces were diluted in sterile water, and plate cultures were made from these in Hiss' medium every day for two weeks. Almost the only organism which we obtained was the bacillus coli communis, which we proved by the various typical cultural reactions. Occasionally we met with colonies with a slight resemblance to typhoid colonies, and whenever we found such colonies we obtained pure cultures and subjected them to all of the cultural tests for the typhoid bacillus, and the Widal agglutination test with known typhoid blood. None of these colonies turned out to be typhoid organisms, and we were never able to recover the typhoid germ from the feces, even though we had given animals larger doses of typhoid bacilli than they would probably ever obtain by natural methods.

In our second series of experiments we used the same animals, but fed them with the same doses of typhoid culture every other day for two weeks. Cultures were made from the feces every day during this time, but we were not able to isolate a single colony of the typhoid bacillus.

Our next set of experiments was performed upon a male pig, which was given one liter of a 24-hour typhoid culture in his food every day for one month. The feces were examined every day during this time by Hiss' method for typhoid bacilli, and several hundred colonies were tested for the properties of the typhoid bacillus. Not one specimen of the typhoid bacillus was obtained during the entire month. Six specimens of urine were examined also, but with negative results.

At the end of the month, three days after the last typhoid feeding, the pig was killed, and cultures were made from the various viscera, but no typhoid bacilli were found. Cultures were also made from the stomach and the large and small intestines, and agar, as well as Hiss' plates, were used. We were not able to recover any typhoid bacilli from any of these cultures excepting a few colonies from the liver. The viscera all appeared normal, and there were no traces of any ulcerations in the intestines. Sections from the viscera, and especially the stomach and intestines, were stained and studied, but nothing abnormal was found. It will thus be seen that after one month's feeding we were not able to recover the typhoid bacillus from the intestines, even at the autopsy.

Two rabbits and two guinea-pigs were also fed for two weeks with a daily dose of about 500 cubic centimeters of typhoid culture placed in their food. Cultures from the feces were taken every day in Hiss' medium, and all suspicious colonies were carefully worked out, but no typhoid organisms were found.

Our last set of experiments was performed upon a young female pig, and since we were able to carry out a thorough series of tests, we shall present our results in this case somewhat in detail. The pig was given daily one liter of a 24-hour culture of the typhoid bacillus, and the feces were taken from the rectum by means of two sterile glass tubes, one passed through the other, so as to avoid contamination from the external parts. The feces were plated in Hiss' medium daily, but no typhoid bacilli were found, although the tests and feeding were carried on for one month. The urine was also examined six times for typhoid bacilli, but none were found.

In order to find out whether the presence of typhoid bacilli in the intestines would produce any effect on the blood, a number of Widal tests were made at regular intervals during the month. Ten tests in all were made, but even at the end of the month the agglutination reaction was absent at a dilution of 1 to 20. The fact that the prolonged introduction of typhoid bacilli into the alimentary tract will not cause any marked agglutinative reaction is in contrast to the condition which can be brought about by the introduction of gradually increasing doses of the typhoid bacillis into the subcutaneous tissues. By carefully regulating the dose we have already been able to raise the agglutinative power in the blood of this same pig to a dilution of 1-4000.

The temperature of this pig was carefully recorded during the month of feeding, and no considerable variation was noted. The temperature never went above 41° C., and never fell below 40° C., so that the feeding of typhoid bacilli did not cause any decided temperature reaction.

Conclusions.

In our experiments we have endeavored to produce infection through the natural route and by natural means by simply allowing the various animals to take in very large quantities of typhoid bacilli in their daily food. Although at least 500 colonies from the feces were carefully tested, we were not able to demonstrate the presence of any typhoid bacilli in two chickens, two white rats, two rabbits, two guinea-pigs, one calf and two pigs. Although we have not employed a large number of animals, we feel justified in expressing the opinion that the typhoid bacillus cannot, as a rule, maintain its struggle for existense in the intestines of the domestic animals. We, therefore, conclude that the dejecta of animals play no considerable part in the distribution of typhoid fever.

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A Suitable Dress for Defence Against Infectious Disease.

By John S. Fulton, M. D., of Baltimore.

Presented at the 28th Annual Session of the American Public Health Association, Indianapolis, October, 1900.

The requisites for a defensive dress are, in the order of their importance: (1) That it shall leave exposed only so much of the body as is necessary to the free use of the senses; (2) that it shall not encumber the movements; (3) that it shall be of sterilizable material, and cheap; and (4) that it shall do no needless violence to propriety. So far as I have seen them exemplified, the efforts to meet these requirements have succeeded best as to covering the body, indifferently as to freedom of motion and use of the senses, and poorly or not at all as to conventional ideas of propriety. I have been conducted about one of the best hospitals for infectious disease in this country with no protective clothing whatever, and I have shambled about another enveloped from crown to heel in clothing that would insure speedy death if it were worn upon the street. Between these extremes I have seen, and carried about, and worn, a great variety of costumes intended, if not adapted, to protect against infection. Only occasionally, when I have been called to see cases of small-pox, have I found either local officer or private practitioner provided with any sort of defensive dress.

I have at length hit upon a dress which suits me at least better than any of its predecessors. I have worn this costume, excepting the hat, on the streets of a city, from house to house, without exciting any comment, and in the house I have been more comfortable and have given less discomfort than I did in any of my previous disguises.

The suit consists of a suit of white pajamas, a baker's hat, a pair of tennis shoes, and four rubber bands.

The pajamas come in four sizes, A, B, C and D, cost $1.50 a suit, and will stand considerable wear. The baker's hat costs 15 cents, and the shoes from 50 cents to $1.50. The rubber shoes will not stand any form of sterilization by heat. For wear in a hospital or in a house, I should suggest felt slippers, made of a single piece of thick felt; they are warm and comfortable, and can be boiled, or autoclaved without injury. A suit with these slippers can be carried in a very small box. The felt slippers cost from 50 cents to a $1.00.

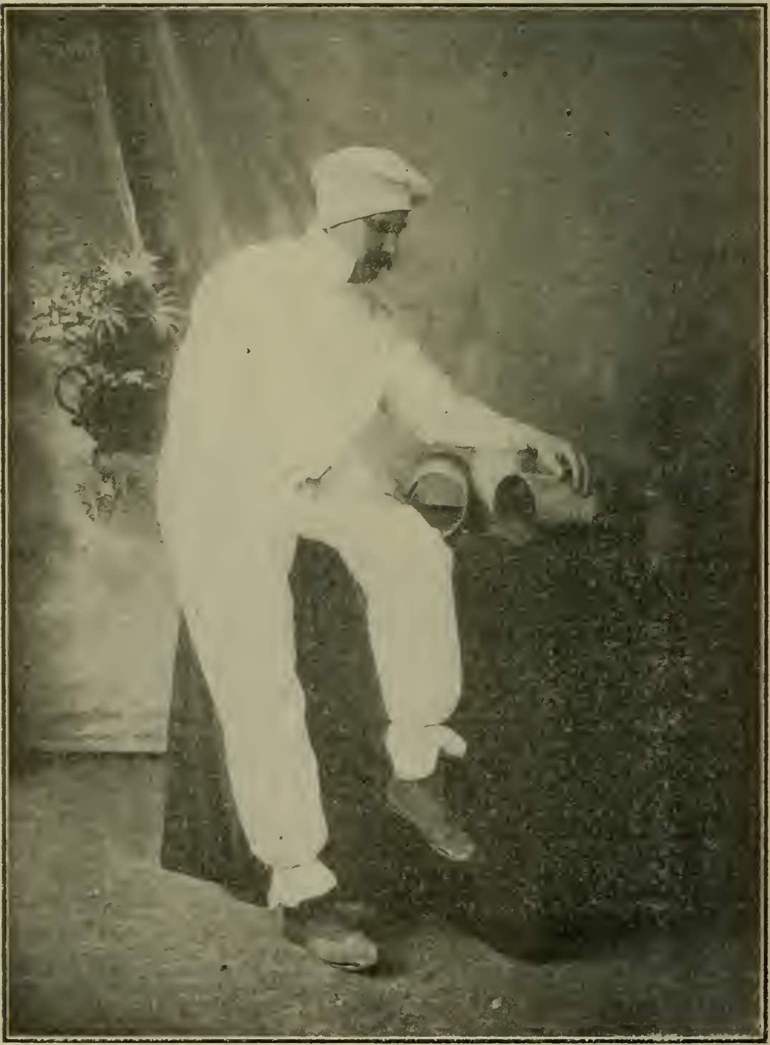
PREPARED TO PUT ON THE DEFENSIVE CLOTHING.

It matters much how these clothes are put on and taken off. First one removes collar and cuffs, and rolls the shirt sleeves up above the elbows. This is done in preparation for washing hands and face after the visit. The trousers must be turned up five or six inches, and then the shoes are changed. Then the pajamas are put on, trousers first, and blouse outside. The rubber bands are next put on, to confine the sleeves at the wrist and the pants over the shoe tops. The hat is pulled down to the neck behind, and nearly to the eyebrows in front. The ears are half covered. The loose crown of the hat should be so disposed as to give fair warning if the head is about to make a dangerous contact. This is an important point. In examining small-pox cases I have often found that the patient's interest in his eruption has been as great as my own, and when the chest is scrutinized two heads are apt to come into contact.

When removing the clothing, be sure not to begin with the rubber bands. The hat naturally comes off first, and is turned inside out. Then remove the jacket, which, if the bands remain at the wrists, will come off inverted, that is with the infected side in, as is right. The drawers also will be inverted by the bands at the ankle. When these garments are nearly off, it is necessary to grasp the ends of the legs and of the sleeves, to make sure that the rubber bands come off with the clothes. The shoes are taken off without touching the socks.

Each garment as removed is folded lengthwise and laid upon the fiber-board, which is intended to make a tight round package, of a size to slip easily into the metal box. About two ounces of formalin may be poured upon the clothing at each end, just before it is slipped into the case. The box being closed, a strip of adhesive plaster is applied to each joint, making the package air-tight. Then one is ready to bathe and reclothe. This package may be quite safely carried in contact with other clothing, though it cannot be worn again without a long airing. Even if the package should remain closed for a year the odor of the formalin will prove overpowering.

This is not an elaborate technic, and by no means so exact as will one day be required of us. In private houses it might be difficult to make a complete toilet. Whenever there is a bathroom, the full toilet which I have described, can be made, the coat, collars, and cuffs being left down stairs. Where there is no bathroom, one may prefer not to change shoes. If visits are to be repeated at short intervals, it may be permissible to leave a suit at the house, provided always it is kept in the safest convenient place, and in its case. The clothing suggested here is cheap enough, to warrant the possession of two suits for each infected house, and a fresh suit per day per house.



DRESSED TO VISIT INFECTIOUS CASES.

When we consider the various infections against which special clothing should afford some defence, considerable difference of opinion will arise. All are doubtless agreed that in visiting cases of the less common infections, as small-pox, the ordinary clothing should be protected. If the golden rule were applied to the inquiry concerning the commoner infections, it would be agreed that the ordinary clothing should not be exposed to those infections which are thrown off by the skin and easily carried in the air, *e. g.*, scarlet fever and measles.

THE BAKER'S HAT PROPERLY WORN.

Of those diseases whose infectious material escapes by an easily defended route, perhaps diphtheria alone seriously endangers the ordinary clothing. A protective dress should be worn because the attendant upon a diphtheria patient usually deals somewhat directly with the infectious material.

It seems to me that general practitioners have in most respects allowed the specialists to go far ahead of them in the practical hygiene of daily work. In this matter of proper apparel their tardiness is particularly apparent. Those who pursue such subsiduary occupations as nursing and undertaking are more careful. The singular spectacle of the general practitioner standing, thus negligent of dress, between the sensibly clad surgeon on one hand, and the uniformed nurse on the other, may be partly explained by the excess of consideration which the professional hygienist, when discussing this subject, usually gives to the element of personal safety. This consideration leads to special clothing of monstrous design, frightful to look at, and to wear, as fretful as a boil or a bustle.

To the average patient more or less befuddled by his disease, a gowned, hooded and gloved specter must be somewhat discouraging, suggesting that the uncouth visitor is more careful of himself than of his patient. Certainly the apparition is fearsome rather than heartening.

No costume which disguises the helpful humanity of its wearer will ever commend itself to the common sense of the profession. Any sacrifice of technical detail is justifiable, provided a just balance be maintained between the safety of the public on the one hand, and the welfare of the infected household on the other. If these two considerations are fairly weighed, the attending physician must disregard well-founded theory and common, though unconfessed, experience in order to determine that he will not protect his clothing.

Most physicians appear to have so determined. While they may try to instruct attendants concerning the avoidance of infection, they exhibit no outward and visible sign of care for themselves as either victims or vehicles of infection. Being without the outward and visible sign, it is, from the layman's viewpoint, reasonable to infer that they lack also the inward grace of antisepsis.

When the rank and file of the profession begin to dress properly for attending infectious cases, they will do so no less for the protection of their business interest than for the sake of personal and public safety. The practice will be certain to receive the stamp of popular approval, and that speedily.

If the Plague Should Enter Maryland.

By John S. Fulton, M. D.

Part of a Symposium on Bubonic Plague, at the National Conference of State and Provincial Boards of Health, Atlantic City, June, 1900.

It has become quite usual for those who write about the plague from experience in plague-stricken localities, principally in India, to tell us how easily plague could be controlled under the conditions of Western civilization, and these views have their soothing effect upon the popular mind. It is in some respects fortunate that the general public can contemplate the remote chances of an invasion with confidence that the general hygienic conditions of American cities and the habits of American citizens are probably not favorable to the spread of plague, but we shall be more than fortunate, if, when plague gets foothold in an American city, the bravery or even the good will of the people shall support the health officials after the first twenty cases shall have happened. It is most important for us who must prepare for such an encounter to examine our defenses and see if they are in fact as strong as we seem inclined to believe.

Leaving out the outbreak at Oporto early in 1899, there is no experience to confirm such a belief. Plague was last epidemic in England, in 1665, last in France, in 1721, last in Russia, in 1771. We must admit that there are no such filthy cities in America or Europe as Hong Kong, Bombay, Canton, or Calcutta, and no such people here as the Chinese and Hindoos, nor can we deny that so far our advantage is a very great one.

On the other hand, we must consider that human life has a value in this land about a thousand times surpassing that of human life in a country where twenty-five coolies are cheaper than one horse. We must further remember that the mortality in the Eastern epidemics has scarcely ever expressed in figures per ten thousand of population, but is expressed sometimes in percentage. In the histories of various outbreaks in the East, one may find the disease itself has been able to deceive the experienced health officials who contend with it. Outbreaks seem in many instances to subside for weeks at a time, behaving, in this respect, as does a case of yellow fever during the period of calm, and many a local board of health in the East, as Barker tells us, has announced publicly the complete suppression of an outbreak, only to find the announcement followed by a recrudescence of the disease in many places, at more or less distance from the carefully guarded foci.

In the East the lay people can recognize plague easily and promptly. The examinations of incoming passengers at quarantine stations in the East is so simple as to seem to us ridiculous. The travelers are disrobed down to a loin-cloth, and in single file pass the inspector, holding up both hands above the head. The inspector puts a hand into each armpit, then into each groin, and feels the pulse. His mental formula is simply, "No fever, no bubo. Pass on." In America we could scarcely proceed in that way.

It is true that positive knowledge of the disease enables us to say that if the first case or two were recognized and isolated the problem of prevention is not difficult, for the bacillus is not very tolerant of conditions outside the body, and isolation of the patient and his excretions is a strong defense against the spread of the disease. But it is precisely at this point of prompt diagnosis that we may break down. Our communication with infected ports is nowhere so close as to fall within an ordinary incubation period of plague, but we cannot guarantee the diagnosis of ship surgeons, nor be always certain of the harmlessness of incoming freight, or the freedom of the ship rats from plague; so that there are some chances of a first recognized case occurring in a home-keeping citizen or a returned traveler, who may be utterly unable to point back to any exposure. Such a case might go quite unrecognized into any American port.

Undoubtedly our Western modes of clothing the body are protective. In the East where the men go bare-legged and the women bare-armed, the men have their buboes in the groin and the women in the armpits. A well-clothed body is a great protection, for the common route of entrance is through an abrasion of the skin. We Americans keep our mouths open as much no doubt as the Orientals; and here is another avenue, the lips and the tonsils being very vulnerable points. In this case the buboes are usually in the neck or else the disease appears in the pneumonic type, which, if it appeared in America at the inception of an outbreak, would almost surely escape diagnosis. The outbreak in Kolobovka, Southern Russia, last summer was exclusively of the pneumonic form. There were 24 cases, only the last case surviving. Again, there is described a skin type of the disease, in which the lesions are multiple abscesses, and certainly not likely to strike the diagnostic sense of unfamiliar Americans.

Most dangerous of all, from our point of view, is the pestis minor, which does not deprive the patient of either his life or his activity, but yet confers upon him the ability to infect others with the more dangerous pestis major. Yet another type is the septicaemic plague, which destroys life in 24 hours or so, without bubo or the other characteristic signs of the disease, and which can only be identified by bacteriological examination.

It is extremely fortunate that epidemics almost always begin with cases showing typical bubo, and that the other varieties only appear as the plague spreads. So at least the observers on the spot tell us, but we must accept this dictum rather sceptically, bearing in mind how much easier it is for us to trace any outbreak of disease back to the first *recognized* case, than a step farther back in the story to a case of *mistaken diagnosis.* Here in the matter of diagnosis is our first danger, and I fear we shall require some experience, of a bitter kind, perhaps, before we can inform ourselves or spread information among physicians concerning the earmarks of this disease.

In Hong Kong cases of mild adenitis were observed some time before any diagnosis of plague was made, and the failure to recognize these earlier cases laid a good and broad foundation for the subsequent epidemic.

Bacteriological diagnosis is said to be easy, the bacilli being present at some time in all cases, but here, too, we shall need to be guarded against possible errors on the part of the bacteriologists, particularly lest we lay too much stress upon their negative findings. In cases of polyadenitis the bacilli of plague disappear when suppuration is well started. They are most abundant in the pre-suppuration period, when they may be gotten in great numbers usually, by simple incision into a swollen gland. It is not certain that the organism is in all respects correctly described in the literature. It is generally said to be motile. This Dr.

Barker tells us is not so. The organism is non-motile. and this points out another error that our bacteriologists may be led into by the text-book descriptions. It has been suggested that when the bacilli are not found in the patient, his disease may be recognized by the agglutinative reaction of Widal with known pest bacilli. There is no experimental evidence that this is so, and since the clumping is probably in some way dependent upon motility and upon the flagellæ of micro-organisms, it is not probable that a Widal reaction would occur with pest bacillus. So much for diagnosis.

As to our outer defences, it may be said that the regulations of the United States Marine Hospital Service, revised from time to time, touch practically all the points concerning passengers, merchandise, animals, baggage, ballast and the disinfection of vessels. A single suggestion of the Oporto Commission has not, as far as I know, been embodied in these instructions. Calmette advises that in unloading vessels the freight shall be carefully scrutinized for the dead bodies of rats and mice, and it such are found that they shall be submitted to expert examination, when if it should appear that the pest has occurred among these animals on ship-board, the cargo, as a whole, should be considered infected, and dealt with accordingly.

As to the spread of the plague by rats it must be said that this is a source of especial danger and one difficult to handle. Considerable doubt has been expressed as to the spread of plague by rats and mice, but if the objections are examined, it will be found that they simply amount to the statement that positive proof is lacking. The evidence against the rats and mice is so strong, that until overpowering evidence in disproof is offered, we most hold the rodents guilty. The scientific men who rightly enough suspend judgment until demonstration is made must not be allowed to divert us practical sanitarians from correct and safe practice, based not always upon absolute knowledge, but quite usually on the balance of probabilities.

How the rodents infect human beings is not known, but there can practically be no doubt for us that they do. It has been suggested that their infection of man is conveyed by the bites of fleas which infest the rodents. Against this is offered the many experiments which are said to show that these fleas do not bite man, but which really only show that they did not bite the observers. Besides, the agency of the flea in spreading plague is not conditioned upon his will to bite or not to bite, but by his ability to convey the bacillus by any means to or near any portal of entry into the human body. The experiments of Simond show that fleas spread the disease from rat to rat, and one must believe that the flea can also transmit the infection to man.

The history of many epidemics begins with the occurrence of a single case or infected house; then a fortnight of suspense, then commotion among the rats, and next human plague in many places well apart. Rats affected by plague are said to leave their accustomed haunts, to lose their fear of man, running about in day time, and behaving altogether in an insane manner. The presence of plague among the rats is not always manifested so plainly in the locality where the infection originates.

Apparently the earliest cases of plague among rats are of a mild character. After a few transmissions from rat to rat the specific organism increases in virulence, great numbers of rats are affected, the mortality becomes very large, and the rodent community becomes panic-stricken; migration results. Sometimes the human population takes to flight at the same time, when it has been observed that the plague is more apt to follow the trail of the rats than that of the migrating people. A sudden invasion of rats in a neighborhood, even miles distant from a known area of infection, is therefore a threatening occurrence.

The prevention of plague, therefore, must include the prevention of its spread among rats and mice. Various means have been proposed for the destruction of the rodents. Stricken communities have sought to accomplish their destruction by paying for the bodies of dead rats. This scheme has nowhere been successful.

Recently M. Danysz, of the Pasteur Institute in Paris, has proposed the destruction of rats by an infectious disease not transmissible to man. Danysz obtained from an epidemic among field mice a coco-bacillus, having the general characteristics of the colon bacillus, and resembling B. typhi murium. This organism is first accustomed to anærobic life by growing in very full flasks of bouillon for four or five days. The culture is then transferred to a collodion sack, sealed and put into the abdominal cavity of a rat for about 36 hours, when it is transferred again to ordinary bouillon and then to bouillon in flasks again. The last flask cultures are sown upon gelatine, and the gelatine growth is found now to be very fatal to white mice. By growing this gelatine culture in capsules in the abdominal cavity of rats, beginning with young rats, and using animals of increasing ages, it is found that after about ten such transfers the germ is brought up to a high and tolerably stable virulence.

A special preparation must be made for each variety of rat. Danysz produced an effective virus for the gray rat (Mus Decumanus), and for the black rat (Mus Ratus) and for the white rat. In stoppered flasks, protected from light and air, the virus maintained its virulence for several months, on gelatine it did not appreciably deteriorate in two months, but in cotton stoppered containers it altered rapidly. This virus was tried in the laboratory and in various places infested by rats, with the result that the rats completely disappeared in 50 per cent. of instances, were appreciably diminished in 30 per cent., and no result was noted in 20 per cent. In a few instances it was observed that the epidemic spread beyond the treated localities.

Inquiry having been made at the Pasteur Institute whether sewer rats could be killed by an infectious disease, Danysz asked to be permitted to test his organism. A section of sewer (160 metres long) was closed off for his use. Into this 200 healthy gray rats were introduced and kept under observation for 10 days, during which all remained well. Then 20 tubes of gelatine culture were distributed upon small pieces of bread. Eight days later the epidemic appeared, when a second distribution of the virus was made. The sewer was visited daily for ten days. Eighty cadavers were counted, of which 40 were taken for autopsy. These latter all showed characteristic lesions, and yielded pure cultures of the bacillus from the blood. The dead bodies left in the sewer were devoured by the survivors. On the 2d of March, 20 days after the first distribution of virus and 10 days from the second there were but 8 rats alive, and these, through the carelessness of an attendant, were allowed to escape.

Danysz concludes that it is possible by this means to kill rats in great numbers; that rats will eat the virus on bread even if an abundance of their ordinary food is at hand; that the disease will spread from rat to rat, but with diminishing virulence; that it is necessary to make a fresh distribution every 10 or 12 days. Since young rats are more susceptible, Danysz believes that spring and autumn are the seasons of choice for this warfare, and that by systematic poisoning it is possible in a year or two to completely exterminate them. Besides rats, it is known that mice, bandicoots, squirrels, guinea-pigs, porcupines and marmots are susceptible to plague. (F. G. Clemow, *British Medical Journal*, *May 12*, *1900*.)

Whatever means are employed to destroy rats it must be borne in mind that the accumulation of dead bodies or their wide distribution may become a nuisance, if not a source of infection.

The means of preventing the escape of rats from, or their access to ships, are well known. Allusion may be made however to the effect of disinfectants upon the animal life on shipboard. Formaldehyde gas is not very destructive to animals, and for this reason sulphur dioxid has been preferred for the disinfection of holds. Experience shows, however, that many rats survive long exposure to this latter gas. It would seem a promising suggestion therefore to employ in addition to sulphur dioxid, carbon dioxid. Steel cylinders of the compressed gas are cheap, easily handled, and used in conjunction with sulphur dioxid should kill the hardiest rodents.

In the presence of plague, and perhaps in anticipation of its invasion, two very serviceable bacterial products are available, both for prevention and cure.

Haffkine's Lymph (Address before the Royai Society, *Brit. Med. Journal*, *1899*) is made by inoculating sterile butter or cocoa oil with the pest bacillus, and introducing minute drops into jars of a sterile fluid medium. The organisms grow from the surface of the drops of oil downwards into the broth in the form of long threads or stalactites. From time to time the jars are shaken, loosening the thread-like colonies, and after about six weeks the medium is about exhausted, and the organisms grow but feebly or not at all. This ripened fluid is now heated to 65° or 70° C., killing the bacteria, and the now sterile liquid is the antipest vaccine.

Its protective power was first tested in a long series of experiments upon animals, rabbits, guinea-pigs, rats and monkeys, and was found to definitely antagonize lethal doses of plague bacillus. It was then tried upon the laboratory workers, and then upon their families. Several English residents ef Bombay, being convinced of its harmlessness, were inoculated with the virus. Then the plague broke out in the House of Correction at Byculla, and an opportunity was offered to test it upon 346 prisoners, all of whom were adults, none aged, and few diseased. Nine cases of plague had occurred when the inoculations were begun. Those who chose to be inoculated numbered 154, leaving 183 uninoculated. Three of the inoculated developed the plague on the day of inoculation; one of them, indeed, having a bubo when inoculated. All of these died. Among the uninoculated twelve new cases occurred, with six deaths. Leaving out the three who had plague on the day of inoculation, there were 151 inoculated persons, among whom there were two cases, no deaths.

This was a sufficiently encouraging first experiment, particularly when it is remembered that no means had been devised to accurately fix the dose of virus. So far the men had fared about as the animals did. The important suggestion derived from these observations was that the inoculation did not have any curative effect, nor prevent the development of plague already incubating. It seems probable that most of the cases which developed plague after inoculation were in the incubative stage of the disease when inoculated. The people of Bombay seem to have been impressed with the result of this small experiment, for between this and the next outbreak about 8,000 people sought inoculation.

In December, 1897, plague broke out in another large jail at Bambay, the Umerkadi Common Jail. Three prisoners sickened and died. There were 401 prisoners here, and they all wanted to be inoculated, but it was determined to inoculate but half of them. The prisoners from each part of the jail were brought out and seated in rows, when every second man was inoculated. There was no subsequent distinction between the inoculated and the uninoculated; all lived precisely as before. The epidemic continued for 30 days, and during that time the releases of inoculated and uninoculated were about equal. The average daily number of uninoculated persons was 127, among whom there happened 10 cases with 6 deaths. The average daily number of inoculated persons was 147, among whom were three cases, all recovering.

This result so far encouraged the investigators that when the next jail outbreak occurred, it was not considered justifiable to refuse inoculation to any who desired it. During the terrible epidemic at Dharwar, a case of plague in the incubating stage was taken to the jail, where he died. Four other prisoners took the disease and also died. All of the 373 persons remaining in the jail were then inoculated. Two days later one man was seized, but recovered, and so the outbreak terminated.

In February, 1898, the first large experiment was made upon a free population. The village of Andhera had lost 79 persons from plague, when inoculation was begun. Every household was visited, and half the men, half the women, and half the children were vaccinated. The outbreak continued for 42 days longer, and appeared in 28 families. In the 28 families there were 71 inoculated persons, and 64 uninoculated. Among the 71 inoculated there were 8 cases, with 3 deaths. Among the 64 uninoculated cases there were 27 cases, with 26 deaths. These were exceedingly weil-planned experiments, and were indeed, as Haffkine says, the most precise of all and freest from chance of error.

From this time on, the experiments were made on a larger scale, and again, as Haffkine observes, with the extension of the number of inoculation, exactitude, and precision of observation must suffer. Inoculations in the same community now ceased to be counted by the hundred. They rose to a thousand, to 10,000, and at one place to 80,000. The results showed a difference in the plague mortality of from 80 to 90 per cent. in favor of the inoculated, and in fatality, the inoculated have chances 50 per cent. better than the uninoculated.

These results arrested the attention of all Europe. Commissioners from England, Germany, and Austria sent to India to study plague, devoted much of their time to investi gating Haffkine's prophylactic fluid. It is a remarkable fact that none of these commissioners spoke enthusiastically of the vaccine, though none of them were able to throw any doubt upon the results. The technique of making the vaccine was open to criticism, and was severely criticised. Much was made of the arbitrary dosage, and the neglect to work out a means of standardizing, or to make any chemical study of the constituents of the lymph, but the attention of the scientific world and indeed of lay observers was held fast by the statistics.

The Viceroy Lord Curzon, after a tour of the plague-infected provinces, said, "If I find, as I do find, that of 100 plague seizures among uninoculated persons the average number who die is somewhere about 70 or 80 per cent., while in a corresponding number of inoculated persons the proportions are entirely reversed, and 70 to 80 per cent., if not more, are saved—and these calculations have been furnished from more than one responsible quarter—I say figures, of that kind cannot fail to carry conviction, and I altogether fail to see how, in the face of them, it is possible for any one to argue that inoculation is not a wise and necessary precaution."

The following are the conclusions of the British Plague Commission treating of Haffkine's anti-plague inoculation:

"1. Inoculation sensibly diminishes the incidence of plague attacks on the inoculated population, but the protection which is afforded against attacks is not absolute. On the other hand, plague has attacked persons who have undergone inoculation as many as four times in the course of two years previous to their attack. On the other hand, as many as 8 per cent. of the inoculated population may suffer from plague. Many varying influences have been at work in determining the rate of attack in different places, and it is impossible to give a numerical expression for the measure of protection against attack which inoculation confers.

"2. Inoculation diminishes the death rate among the inoculated population. This is due not only to the fact that the rate of attack is diminished, but also to the fact that the fatality of the attacks is diminished. Here again no numerical expression for the amount by which the death rate is diminished can be given.

"3. Inoculation does not appear to confer any great degree of protection within the first few days after the inoculation has been performed. This fact, we may note in passing, has an important bearing on the risk of infection which would be incurred by recently inoculated persons if they were left behind in surroundings so plague-infected as to render their evacuation by the inoculated desirable.

"4. Inoculation confers a protection which certainly lasts some considerable number of weeks. It is possible that the protection lasts for a number of months. The maximum duration of protection can only be determined by further observation.

"5. The varying strength of the vaccine employed has apparently had a great effect upon the results which have been obtained from inoculation. There appears to be a definite quantum of vaccinating material which gives the maximum amount of protection, and provided that this quantum can be injected in one dose, and provided also that the protection turns out to be a lasting one, reinoculation might with advantage be dispensed with. The best results from inoculation will only be obtained after an accurate measure of standardization has been devised."

When plague entered Oporto in June, 1899, Calmette and Salambeni, from the Pasteur Institute in Paris, were sent to study the subject. (*Annales de l'Institut Pasteur*, Dec., 1899.) They were able to test the antipest serum of Yersin in the treatment of plague, and to find a distinct place for it in the prevention of the disease. They confirmed the observation of Haffkine, that the preventive lymph, if given while plague was incubating, not only failed to prevent the attack, but seemed to hasten its development and perhaps to increase its severity. Manifestly, therefore, it might be unsafe to inoculate with Haffkine's fluid those who were known to have been in contact with the disease. In these cases the preliminary injection of the antitoxic horse serum of Yersin was found to be free from any such danger. The Yersin serum gives immediate passive immunity, but of short duration, so that it is necessary, when plague is present, to follow the Yersin serum, or to mix it with the lymph of Haffkine, which confers a far more enduring immunity, but following the injection at an interval of eight or ten days.

The Yersin serum requires no description. It is produced in the familiar manner by immunizing horses. For cure Calmette advises much larger doses than were previously recommended, and strongly urges intravenous injection of the first dose, (20 c. c. into a vein, followed by two subcutaneous injections of 40 c. c. each in the first 24 hours; diminishing hypodermic doses on succeeding days).

Both the serum and the prophylactic fluid have been criticised as lacking accurate standardization. These difficulties are likely to be overcome. In respect of the prophylactic, one must regard both its production and the results obtained as quite remarkable in view of the climatic disadvantages surrounding the investigators.

SOME CONVENIENT LABORATORY DEVICES.

Read with Demonstration before the Laboratory Section of the American Public Health Association, at Indianapolis, October, 1900, *by* John S. Fulton, M. D., *and* Wm. R. Stokes, M. D., *for the State Board of Health of Maryland.*

The devices which we show are mostly designed as savers of time or material. You all know what an extremely slippery pile Petri dishes make, and few accidents are more exasperating than the avalanche of plates which is liable to occur when one opens the oven door. After that neither the dishes nor the workman is fit for dress parade. In order to prevent these mishaps, to sterilize many plates at once, and to preserve them indefinitely in a sterile condition, we use this box, which consists of a brass base having three upright arms, two fixed, and one pivoted arm bearing a loose-rivited ring. On the base the plates are stacked against the fixed uprights, the loose arm is raised, and the ring slipped over, embracing the two uprights, after which the cylindrical cover is slipped down between the uprights and the plates, converting the whole into a dust-proof package. We think that this is a more

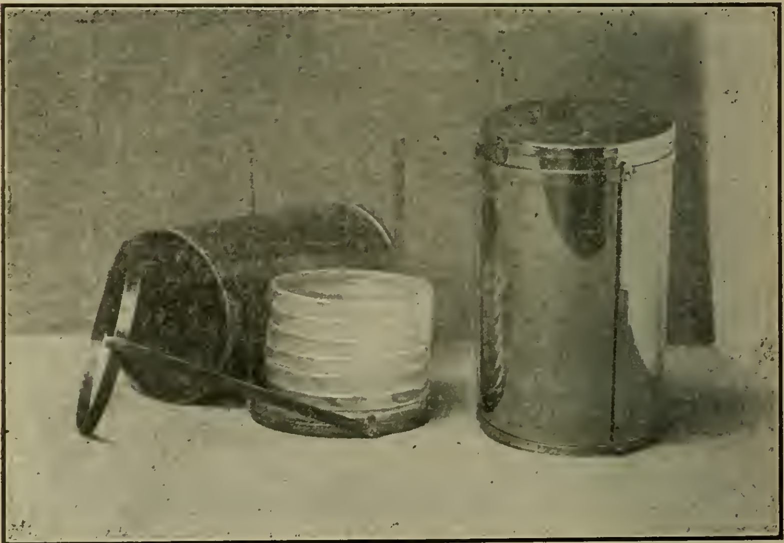


Figure 1. Dust proof Sterilizing and Storage Box for Petri Dishes.

convenient and more effective device than the hinge boxes of square shape, which we have seen elsewhere. It is a rule of the laboratory that plates are never put into one of these boxes, except it is filled and immediately sterilized. There is no hesitation about using a plate found in one of these boxes, and it is very rare that any investigation has to wait till plates are sterilized.

Here is a cage which we use to put away inoculated plates for observation. It consists of a brass base surmounted by two bent wires crossing each other just in contact at a convenient heighth, and forming four uprights, against which plates may be safely stacked. There is a similar bent wire, loose-jointed to the base, which crosses both the others, engaging a notch at the middle of the bend where the wires all cross. By pressing the two stiff wires together with the left hand, the space on the opposite side opens enough to allow the plates to be stacked in with the right hand, after which the loose arm, being swung up and sprung into the notch, converts the whole into a safe package.

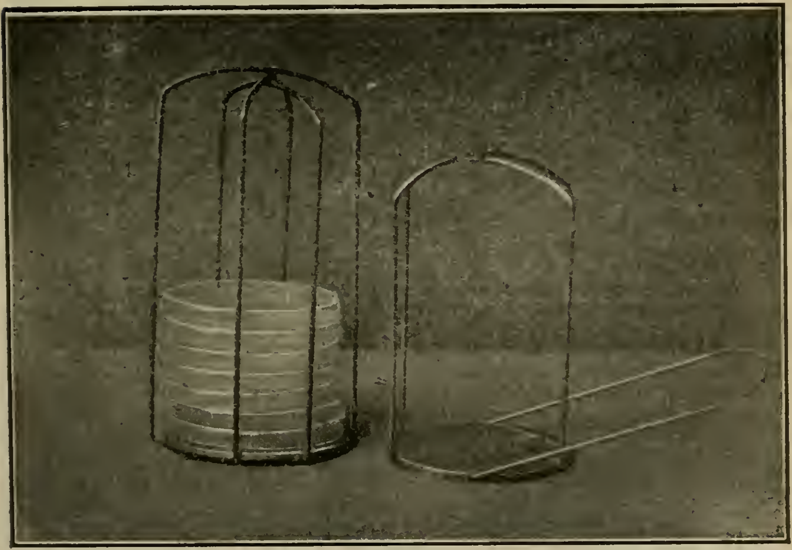


Figure 2. Cage for Incubating Plates.

This device prevents much breakage, keeps kindred specimens properly assembled, and saves space in the incubator and on the shelf. When one of these cages is found on a particular table, it is known that the plates are to be washed. When found on a particular shelf it is known to contain work under observation.

Fermentation tubes are exceedingly short-lived in the laboratory. They require much time for proper storage in the sterilizer and in the incubator, and, being employed usually in groups of three, there is a certain risk of confusion. We have to a certain extent met these difficulties with the tray, which I show you. It is a light brass plate with twelve brass pins, an inch and a quarter high. The hollow stem of the fermentation tube slips over the pin. I have had a fine kerf sawed into the end of each pin, and into this slit have put a bit of rubber band. This grips gently the sides of the glass stem, and prevents wobbling. Without this addition, the

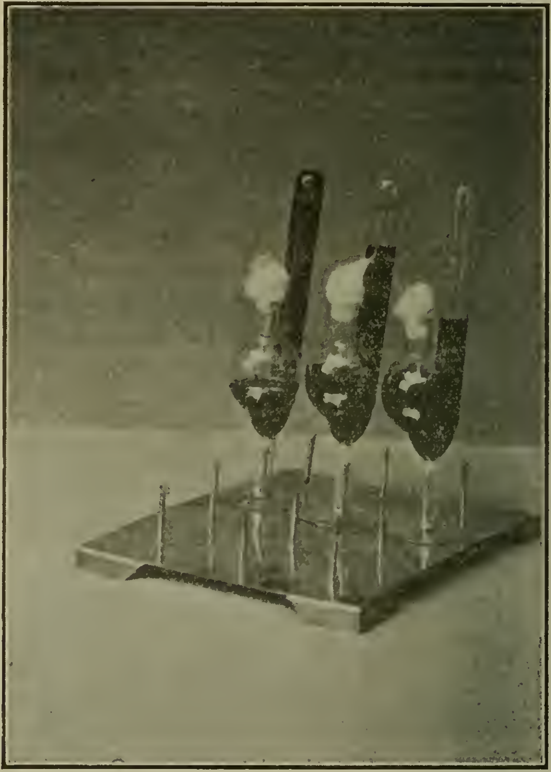


FIGURE 3. Tray for Fermentation Tubes.

tray full of tubes may be carried about quite safely. Twelve tubes or four sets for water examinations go on each tray.

The water sample box explains itself. The inner compartment is for ice. When set in the second galvanized iron box the projections of the inner box form compartments in which the sample bottles are carried. The sample bottles are ground-glass-stoppered two-ounce squares. One side of each bottle is etched with the preparation of hydrofluoric acid known as "Diamond Ink." On this surface the record is made with lead pencil when the sample is taken.

The bottles are not so treacherous in hot-air sterilization as might be supposed. Each stopper is tied to the neck of the bottle, because the stoppers are not interchangeable.

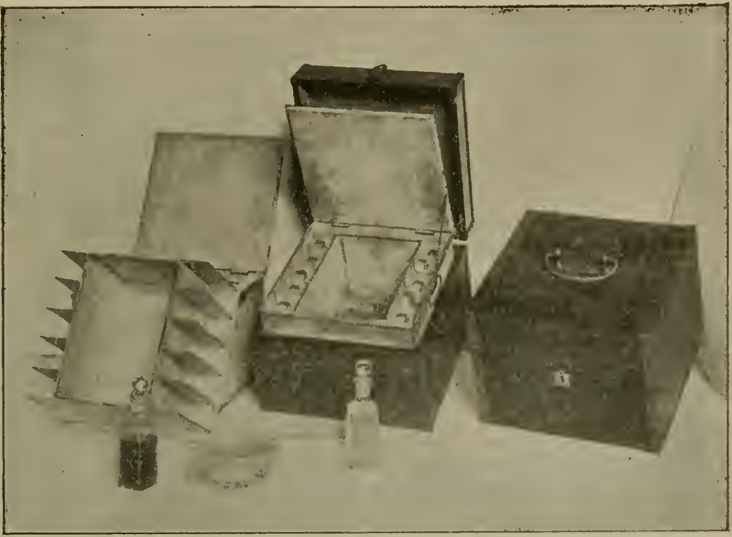


FIGURE 4. Express Package for Ten Samples of Water for Bacteriological Examination.

The outer case, as you observe, is rather handsome. At first our outer cases were made of soft wood, and with lighter hardware. They fared badly in the express car. When we sent out later these voluptuous looking boxes, they probably tested the cupidity of the carriers. At any rate one came in bearing evidences of an attempt at burglary. The projecting handle might seem a disadvantage in a shipping case, but it has the advantage of preventing expressmen from piling other things upon the box, and so keeps this "keep cool" plate in view. The box would be further improved if it had a brass dowel on each side, such as are now placed on trunks, to prevent injury by twisting. This is a practical carrying case, and has given us good service.

Here is a stove which we have devised to use in making plate cultures at the well side. If we can do that we can save half the delay of transportation, and get more accurate results besides. When samples are carried at ordinary temperatures the bacteria increases very rapidly; while transportation in the ice box reduces the number of organisms materially.

The stove is a brass box, lined with asbestos, and enclosing a second brass box perforated, as to the top, with five holes, four to fit the agar tubes, and one for the thermometer. Clear through the stove passes a central cylindrical opening, having brass gauze sides. Into this opening fits a gauze cage, having a central wire upon which the fuel is carried. The fuel consists of carbon compressed into tablets. The carbon disks are manufactured for the little pocket stoves which motormen are said to use in the colder regions of this country. This stove has its special thermometer, but prac-

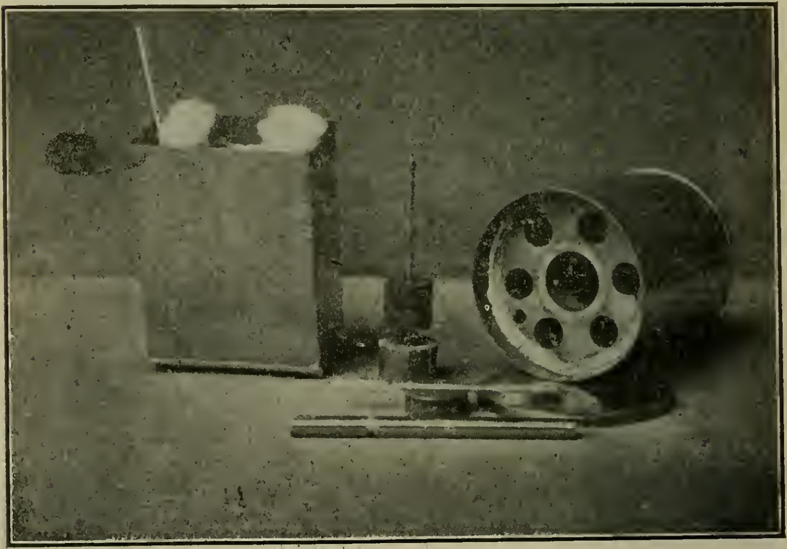


FIGURE 5. Two Portable Carbon Stoves for making plate cultures at the well side, showing also the Fuel, Thermometer, Pipette and Pipette Case.

tically one is not needed. If one lights two of the carbons a temperature of more than 100° C. will be obtained in 15 minutes.

To illustrate the advantages of well-side plating over transportation of samples in the ice box, we made five experiments last week, which gave the following results:

Tap water, fresh: 239, 269, 197, 288, 424. Average 283 colonies per c. c.

Tap water, iced 24 hours: 102, 70, 60, 90, 96. Average 84 colonies per c. c.

Tap water, stale 24 hours: 2654, 930, 2340, 10,140, 1146. Average 3642 colonies per c. c.

Here is the special 1 c. c. pipette, which is used at the well side. The graduation, as you see, is in the narrow tube, and there is room enough above the graduation for easy handling. They are carried in these metal cases. Observe the letter S upon the joint of the case. When these pipettes go into the sterilizer the S is perfectly adjusted. In the field the inspector knows that pipette case having a rightly adjusted S contains a sterile pipette. If the S is wrong, he does not use it. The chance of using a pipette the second time is precisely as large as the chance of accidentally putting the case together with the two parts of the S adjusted. If need be, these pipettes can be sterilized in the stove.

These long telescope cases are for the graduated pipettes of the laboratory. They have the S adjusted when they are put into the sterilizer. A case having the S broken, does not contain a sterile pipette.

Half of the cost of these cases is in the engraved S. A straight mark would do just as well, and perhaps a cheaper case would have answered all the needs. Still it may be said that as these graduated pipettes are themselves somewhat expensive, and on that account, perhaps, easily broken, laboratory workers may be somewhat more careful of them when they are enclosed in bright metal cases.

For carrying the plates in the field we have this extensible box, which will carry two, four, six or eight plates without danger of displacing the covers, and with no great danger of sliding the agar about. In order to fit snugly plates of varying depth the lid is fastened down by these brass chains and snap-hooks. The spring on the inside of the top holds the plates firmly. This removable side gives you a deeper box if you need it. Without it, two or four plates are carried equally well; with this extra side, six or eight.

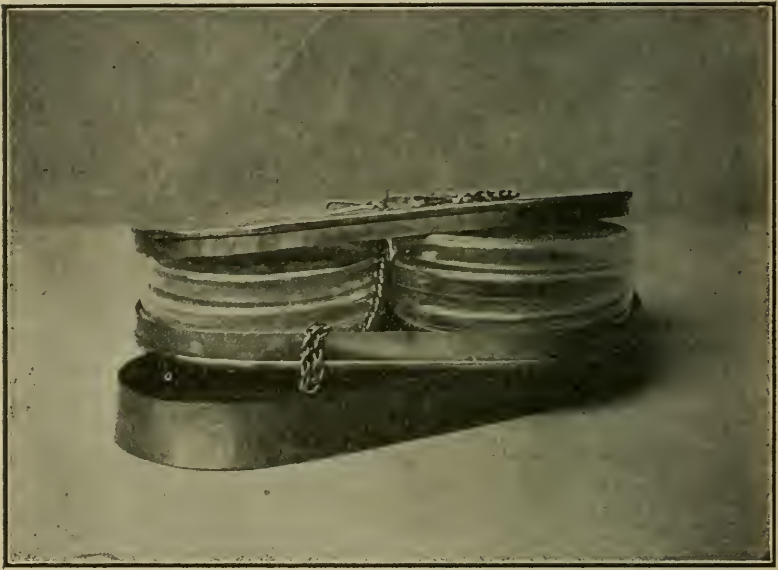


FIGURE 6. Extensible Box for Carrying Inoculated Plates in the Field.

We etch the covers of our dishes in order that the record may be written with a lead pencil. This rids of the messy grease pencil, and it has another slight advantage in that it prevents mistaking tops for bottoms. The etched surface is a great advantage in the field.

These aluminum tags are used chiefly to mark madia baskets. They furnish a good surface for lead pencil writing, can be easily cleaned, stand heat, and are not expensive. They are attached by means of the snap-hooks.

This is a scale for reading fermentation percentages. I saw in Theobald Smith's laboratory a scale of which this is a reproduction in aluminum. It is a handy tool, but costs twice as much money, and contains twice as much metal as is necessary.

The scale is held in the left hand, the fermentation tube in the other. You hold the tube against the scale in such a manner that the convexity at the top of the closed arm is about bisected by the top line, and an equal portion of the contraction at the bottom is cut off by the lower line, and you read the water level from the scale at either end.

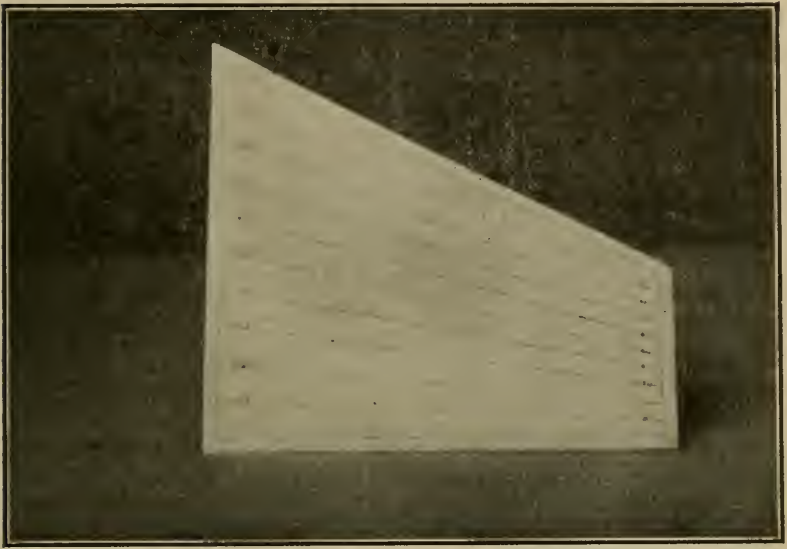


FIGURE 7. Scale for Reading Gas Percentages in Fermentation Tubes. Original seen in Theobald Smith's Laboratory.

I append the prices paid for each of the articles. As each article was the first of its sort, the cost was considerably higher than one would expect upon a second order.

Round stove, $2.25; square stove, $2.00; sterilizing box, $2.00; fermentation trays, 75c.; plate cages, 80c. to $1.00; water sample box, $8.00; aluminum tags, 7c.; aluminum scale, $4.00; pipette cases, 75c. to $1.00.

THE ELKTON MILK EPIDEMIC OF TYPHOID FEVER.

John S. Fulton, M. D., Secretary of the State Board of Health of Maryland.

Elkton, the county seat of Cecil County, Maryland, is a town of 2,542 inhabitants, built upon a red clay soil, rather flat as to surface, but sloping gently toward the Elk river. This small stream is not navigable, is but slightly influenced by the tides, and the highest part of the town is only about 25 feet above its mean level.

The public water supply is obtained from the river, a mile and a half above the town. The stream above the waterworks flows through a farming country, and is unprotected. There is no impounding reservoir, the water being distributed by the pressure from a standpipe. The Bacillus coli has been found on several occasions in the town supply, but not during the year 1900. The quality of the water is at no time above suspicion.

The town is unsewered. Surface-closets are largely used, and the better houses are supplied with water-closets discharging into cesspools, some of them uncemented, and some probably penetrating the 15 feet of clay into the gravelly subsoil.

The majority of families obtain their drinking water from private wells 20 to 30 feet deep. Enteric fever has been present in Elkton every year, and two epidemics have occurred—one in 1884, which was traced to a dairy, and the one in 1900, which is now under consideration.

Of the four dairymen delivering milk in Elkton in 1900, the largest business was probably that of A., whose farm is about three miles distant. On his way to town every morning A. obtained milk from two other farms, both of which remained free from sickness in 1900. Whether the milk was distributed mixed or unmixed could not be learned. More than half of A.'s supply was obtained from his own herd of 22 or 23 cows. A.'s manner of handling milk was not better nor worse than is usual with small dairy farmers. The well is about 15 feet from the barnyard fence, and beside it stands a large wooden trough in which the cans were set to cool the fresh milk. This water served all the purposes of the family and the dairy. Two samples of water were obtained from this well at different times in October, 1900, and two determinations were made upon each sample. *B. coli* was isolated in all four instances.

In September, 1900, a case of typhoid fever occurred on the adjoining farm B. Mrs. A., wife of the dairyman, assisted in nursing the case at B. during the two or three weeks preceding death, which occurred on October 5th. Before this date Mrs. A. and her son, aged 15, were ailing, but the boy continued to milk the cows, and Mrs. A. to prepare the milk for market, until about October 8th, when both were obliged to cease work. A homoeopathic physician was called and pronounced a diagnosis of "Summer grip." Neither of them was severely ill, though both when seen by myself on October 28th were pale, weak and emaciated. The older son, aged 21, suffered a more severe attack early in November, the same diagnosis being made. The father alone of the family remained well. They refused to submit blood specimens for the Widal test, and the attending physician, though admitting a doubt as to the nature of the illness and professing his belief in this means of diagnosis, withheld his consent to a blood examination.

The notification law is fairly well observed in Elkton, and previous to this time there had been but three cases of typhoid fever, all in one family, using the public water supply. These cases, A. D., age 32, August 12th; E. D., age 71, September 12th; and M. D., age 36, September 19th, were all in the care of the Health Officer, Dr. Bratton, who attributed the first case to an infected well at a house which the young man frequented. The two later cases cannot be so accounted for. Possibly they belong to the milk outbreak, though it is very unlikely. The family began to be supplied with A.'s milk late in August, at which time A.'s milk was probably not infected. The excreta in all the D. cases were disinfected.

On October 11th three cases of typhoid fever were recognized in Elkton; on the 12th, one case; 13th, two cases; 14th, three cases; 15th, three cases; 16th, three cases; 18th, six cases. These cases were attributed by the local Health Officer, Dr. Bratton, to A.'s milk. The evidence on the 18th was as follows: Infected households, 17; using the public water supply, 11; using private wells, 6; using A.'s milk, 17. Among the 21 cases there was but one in which doubt was felt about the use of A.'s milk. Mrs. M., aged 63, attacked on October 12th, was not a regular customer of any milkman. There were but two persons in her house, neither of them caring for milk, but they did occasionly stop A.'s wagon and buy cream and milk for table use (in coffee and on fruit). A date when milk had been bought within two or three weeks preceding this illness could not be fixed.

The Health Officer considered this evidence strong enough to warrant advising A. to discontinue the sale of milk pending further investigation. A. continued his business, though his customers steadily forsook him. He ceased selling on October 28th. On that date the figures were as follows:

Infected families, 32; using the public water supply, 18; using private wells, 14; using A.'s milk, 32. Total number of cases, 39.

Among these was the case of Mary D., aged 10, who was ill when brought into Elkton on October 20th, from a farm where her mother was employed as a domestic. Her home in Elkton was supplied with A.'s milk, and had a private well. Her sister, Jennie D., who was not out of town, became ill on October 24th. It was subsequently learned that A. left milk daily for Mary D.'s use at the farm. This farm-house, infected by A.'s milk, is not included in our figures.

The outbreak subsided after October 29th, the record being (January 1, 1901) as follows:

Infected houses, 39; using town water, 21; using private wells, 18 , using A.'s milk, 39. Total number of cases, 64.

In the S. household there were three cases, the last of which occurred 35 days after the last delivery of A.'s milk. This third case is not included in our figures. The S. family, besides two undoubted milk cases, adds to the record the interesting case of Alice M., who visited the town for two days only, stopping with the S. family on October 5th and 6th. She returned on October 7th to her home in New Jersey, where she failed with enteric fever on October 14th. The first case in the S. family fell ill on October 16th.

But one case was traced to mixed milk. Mrs. B. was supplied by a neighbor who sold milk in a very small way, part of her stock being regularly obtained from A.'s wagon.

In the W. family was a negro servant, whose chief food consisted of oatmeal and milk. She left Elkton about the middle of October, and went to Glasgow, Delaware, where she became ill, and died of typhoid fever on November 13th.

In the B. family was a married daughter, aged 38, who left Elkton late in October to visit friends in Pennsylvania. About ten days after leaving Elkton she was attacked with typhoid fever.

The most interesting series of cases, and one which supports in a striking manner the causative relation of A.'s milk to the epidemic, occurred at the jail. The jailer's wife, aged 35, and her two sons, aged 17 and 13, had typhoid fever. None of them admitted the use of A.'s milk as a drink; two of them used it in coffee and on oatmeal and raw fruit, and one of them only as ice cream. Ice cream was made regularly once a week from A.'s milk. No milk was given in any form to the prisoners. The iron bars kept the prisoners in and the milk out. The inmates of the prison proper numbered from 15 to 20 during the period of this outbreak. There were, however, two negro men among them who were not criminals. One was an epileptic and the other an insane man. These two slept in the jail, and during the day were employed in domestic service and in errands about the town. The jailer, anxious to have his insanitary building condemned by the authorities, declared that these two men had all their meals with the prisoners, but it is certain that they had daily access to the family provisions, and it is most significant that these two men were both attacked with typhoid fever in the first week of November. Here were some 24 persons exposed under one roof to conditions identical in all respects, except as to a single article of diet and as to the visits in the town. Down to October 29th A.'s milk reached as far as the prison bars, which divided the inmates into two classes; six on this side, who could get milk, and of whom five had typhoid fever; and eighteen on the other side, who could not get milk, all of whom escaped. No other case appeared at the jail until about the 8th of December, when a white man, after ten days' incarceration, developed typhoid fever. He was a tramp, had been in the town but a few days before his arrest, and his history threw no light upon the source of his infection. This case was followed by two others which could not be traced to any source outside the jail.

Summing up, we find first that the town of Elkton had a single infected house on October 1st. On October 5th, a death from typhoid fever occurred on a farm 3 miles from town. On the adjoining dairy farm, two persons, known to have been in intimate contact with the preceding fatal case throughout its course, became ill with a fever during the first week of October.

Beginning on October 11th, the town of Elkton suffered an outbreak of typhoid fever numbering 39 cases in the first eighteen days, during which time the dairyman's business continued. Twenty additional cases occurred within the three weeks following the milkman's last sale, and four cases from the latter date to the end of the epidemic. There were in all 30 houses infected, all supplied with A.'s milk. In the 39 houses occurred all the typhoid fever which appeared in Elkton during the last three months of 1900. Taking into account the three cases which developed shortly after leaving Elkton, the one case which came to Elkton while ill, and the three cases in jail in December, we have 64 cases of typhoid fever, of whom 61 were consumers of A.'s milk, and the 60th case fell ill within 18 days of A.'s last delivery. After a further interval of 13 days came the first of the four cases which are not attributable to A.'s milk. None of these happened within the period of immediate influence of A.'s milk, namely, from the appearance of fever at A.'s farm, in the first week of October, down to November 21st, twenty-three days after the milk ceased to be sold.

In the outbreak two deaths occurred, both women; one white, aged 56, and the other a young colored woman.

Three patients who recovered had suffered previous attacks, one in the milk epidemic of 1884, one in 1893 and one in 1898. The last named was a prisoner and probably not a milk case.

Period of Incubation.

The case of Alice M. shows a period of incubation not longer than nine days; October 5th to 14th. Cases in which the date of infection can be accurately determined are somewhat rare.

Emil Janchen[1] (1898) reported an outbreak in which the date of infection was known, and the symptoms of onset were marked. A number of regiments returning from autumn manœvres passed, without halting, through a village where typhoid fever was prevalent. These troops showed no special incidence of typhoid fever. One regiment, however, halted in this village, on a hot day, after a tiresome march, and the soldiers drank freely of the infected water. This occurred on the 10th of September, and the symptoms of invasion of typhoid fever appeared on succeeding dates, as follows:

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[1] *Wiener klin. Wochenschr.* Jahrg. XI. p. 667.

September	12th	2	days later	3	cases.
“	13th	3	“	7	“
“	14th	4	“	6	“
“	15th	5	“	4	“
“	16th	6	“	4	“
“	17th	7	“	5	“
“	19th	9	“	1	“
“	20th	10	“	2	“
“	21st	11	“	1	“
“	22d	12	“	1	“
“	23d	13	“	1	“
“	24th	14	“	1	“

These 36 casees completed the outbreak. The numerical strength of the regiment is not given, but it may be assumed to have contained 1,200 men (the peace footing in Germany) of susceptible ages, giving an attack rate of 3 per cent. Fatigue probably shortened the period of incubation in these cases.

Stokes and I[1] reported in 1898 an outbreak in which the date of infection was precisely determined. In a suburban community of 400 persons, the pump, which supplied water of good quality, became disabled on the night of July 3d. The supply for July 4th was drawn from a well which contained *B. coli.* On July 5th the regular supply was restored. The use of infected water was, therefore, confined to the 4th of July. On the 9th, 10th and 11th of July some 25 persons were seized with gastro-intestinal symptoms. All had diarrhœa, and nearly all had fever. One had fever, bloody stools and loss of weight; two had delirium, chills, fever and diarrhœa. All recovered in from three to seven days. None of these were regarded as cases of typhoid fever. On July 27th two young ladies, and on August 1st a third, fell ill with typhoid fever. Other sources of infection than the water supply of July 4th were carefully excluded. Here, after one day's exposure, we have incubation periods of 23 and 28 days. The attack rate was 75 per cent. among 400 people of all ages.

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[1] *Report of the State Board of Health of Maryland*, 1898, page 103.

In the Marylebone epidemic[1] of 1873 is recorded the case of a child who drank the infected milk but once. On the afternoon of July 19th, she is said to have drunk two pints, and her illness began on July 24th; a young subject, massive dose and short incubation.

The Clifton epidemic[2] of 1897 included the case of a child of 9, who drank the infected milk on but one day, her attack following "at the end of a week."

In the Mont Clair, N. J., outbreak (1894)[3], 9 persons were said to have drunk the infected milk once only. These fell ill from 14 to 27 days later. In this epidemic the fatality was 13 per cent., and 28 out of 44 families using the milk were attacked.

The great Harwood outbreak[4] reported by Sargeant included one person whose attack came two days after a single glass of the infected milk. In contrast with this was the case observed by Power[5], in which the attack followed a single glass of milk after an interval of 3 weeks.

In the Elkton epidemic the first 21 cases seem to indicate periods of incubation averaging under rather than over 14 days. In the 60th case the time from the last drink of milk to the first visit of the physician was 19 days. If this case be regarded as the last one due to milk, it probably indicates for this outbreak the longest period of incubation.

Attack Rate.

The dairyman claimed to be regularly supplying 80 houses. This statement was made at a time when his interest would have been served by proof that a great part of his route was free from typhoid fever. On this basis the house incidence was 48.75 per cent. In the 39 infected houses were 180 people, so that the attack rate in these houses was 33⅓ per cent. The case rate was 1.54 per house. Taking the milkman's estimate of 80 exposed houses, with 4.6 persons per house, we should have 368 persons exposed, giving a general attack rate of 16.3 per cent. The light fatality, 3.3 per cent., suggest a contagium of slight virulence; but milk as a vehicle usually means large dosage, and the dose is related to the period of incubation, the attack rate, and perhaps to the fatality.

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[1] *Report of the Medical Officer to the Local Government Board*, 1874, No. II, pp. 103-136.

[2] D. S. Davies, *Lancet*, 1897, vol. II, p. 1442.

[3] R. C. Newton, *New York Med. Record*, vol. XLV., p. 713.

[4] *Lancet*, 1895, vol. I. p. 1328.

[5] Quoted by Dawson Williams from Report, 1892, of a Committee of the Clinical Society of London to investigate Periods of Incubation, etc., *Twentieth Century Practice*, vol. XIII. p. 371.

In the Clifton epidemic, before referred to, it was observed that the attack rate was highest among the people who received the unmixed milk of the infected dairy. Two other milk-vendors received a small part of their supply from the infected milk. The houses served by these two vendors with mixed milk were attacked at the rate of 41.8 per cent. and 38.5 per cent. respectively, as against 54.4 per cent. for the unmixed milk.

In an epidemic recently reported at the Iowa State College[1], the attack rate was 8.8 per cent., the fatality 4.8 per cent., and the striking observation is made by Dr. Kennedy that among the football players, who were served a double allowance of milk, the attack rate was 50 per cent. The whole number of cases, 42, appeared in a period of 27 days, the last two cases being separated from the last service of infected milk by a period of 19 days.

The influence of dosage is also apparent in the incidence of the disease upon children. Cameron[2] reported an outbreak, at a barrack, due to milk, in which the attack rates were as follows:

Among	600	constabulary,	20 cases,	3.3	per cent.
"	40	women,	2 "	5	"
"	100	children,	10 "	10	"

The fatality was 15.6 per cent., all falling on the men. In the milk epidemic at Stamford, Connecticut[3], 34.8 per cent. were between 1 and 10 years old, and 16.8 per cent. were 5 years old and under. In the Waterbury outbreak[4], 23.3 per cent. of cases were 10 years old and under. In our epidemic at Elkton there were 19 cases between the ages of 20 months and 10 years; 31.66 per cent.

I have to acknowledge particular indebtedness to Dr. Howard Bratton, Health Officer of Cecil county, for important details concerning this interesting epidemic.

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[1] *Iowa Health Bulletin*, vol. XIV p. 91.

[2] *Dublin Journ. of Med. Sci.* Nov., 1899, vol. CVIII., p. 330.

[3] H. E. Smith, *Report of State Board of Health of Connecticut*, 1895, p. 168.

[4] H. E. Smith, *Ibid.* 1890, p. 248.

Table showing the Case-Mortality in 56 Outbreaks of Typhoid Fever, due to Milk.

	Year.	Cases.	Deaths.	Per Cent.
Islington..................	1870	175	30	17.1
Armley.	1872	107	11	10.03
Leeds	1872	93	14	15
Moreley and Balsall Heath. ..	1872	96	10	10.04
Parkhead.	1873	39	6	15.4
Marylebone..................	1873	244	26	10.7
Brighhouse....................	1873	68	8	11.75
Wolverhampton...	1873	63	14	22.2
Brierly Lane....	1874	65	14	6.15
Queensbury.....	1874	36	1	2.8
Dundee	1874	19	4	21.05
Jarrow.......................	1875	34	2	5 8
Glasgow.......	1875	121	3	2.50
Eagley and Bolton...........	1876	249	21	8.4
Greenock	1877	20	2	10
St. Pancras.....	1877	35	2	5.7
Glasgow and Hillbead....	1878	166	16	9.6
Morsside.....	1878	32	10	31.25
Bristol.........	1878	131	12	9.16
Chichester.....	1879	50	6	12
Penzance.....................	1880	26	4	15.4
Glasgow.......	1880	508	69	11.6
Rochdale....................	1880	35	9	25.5
Bridlington..................	1880	48	8	16.6
Southport.........	1880	32	2	6.25
Worthing	1880	44	8	18.1
Leicester Infirmary...........	1882	12	2	16.6
Allegany City...............	1882	40	4	10
Glasgow...............	1882	59	6	10.2
Gateshead..........	1883	44	6	13.6
St. Pancreas.............	1883	431	62	14.3
Port Jervis...................	1883	159	17	10.6
Aberdeen................	1883	25	2	8
St. Albans...........	1884	131	23	17.5
Aberdeen	1884	65	7	10.77
Glasgow......................	1884	143	32	22.4
Leichhardt..................	1886	38	5	12.2
Spennymoor	1888	25	5	20
Stirling.....	1889	40	34	10
Svarteborg...................	1889	104	11	10.06
Wyandotte......	1890	11	2	18.2

TABLE SHOWING THE CASE-MORTALITY IN 56 OUTBREAKS OF TYPHOID FEVER, DUE TO MILK—*Concluded.*

	Year.	Cases.	Deaths.	Per Cent.
Lauchstadt	1890	74	9	12.2
Edinburgh	1890	63	3	4 8
Gross Isle	1891	8	1	12.5
Shawland	1891	42	4	9.5
Plymouth	1892	12	1	8.33
Springfield, Mass	1893	150	25	16.33
Montclair	1894	107	14	13
Montclair	1894	19	1	5.3
South Lambeth	1894	59	10	16.6
Brixton	1894	60	10	16.66
Stamford	1895	386	22	5.7
Great Harwood	1895	80	5	6.25
Dublin	1899	32	5	15.6
Iowa State College	1900	42	2	4.8
Elkton	1900	59	2	3.2
Totals		5,056	614	12.14

A PRELIMINARY NOTE UPON HYDROCYANIC ACID GAS AS A DISINFECTING AGENT.

By John S. Fulton, M. D., Secretary of the State Board of Health of Maryland.

Experiments, which at present I shall report briefly, lead me to suggest that hydrocyanic acid gas may be found a reliable agent for house disinfection by boards of health, especially serviceable in maritime disinfection, and, alone, or in combination with other gaseous germicides, very effective against certain infectious diseases.

In bactericidal power hydrocyanic acid is inferior to formaldehyd, but formaldehyd is not more effective against diphtheria bacillus and the nonsporulating bacilli generally. It offers a slight advantage over formaldehyd for house-disinfection in that it is generated without fire. Reported experience does not indicate that formaldehyd generators are dangerous, but having narrowly missed burning a house in my own first disinfection with a Robinson lamp, I have constantly expected worse luck with lamps of any sort.

Hydrocyanic acid is somewhat more expensive than formaldehyd, and it is undoubtedly far more poisonous. The destructive effects of hydrocyanic acid upon animal life point to its usefulness in disinfection after plague, yellow fever and malaria. At quarantine stations formaldehyd has not found favor in the disinfection of vessels, the chief objection being that it is not very injurious to rats or other ship vermin. Hydrocyanic acid holds undisputed rank as the speediest of gaseous poisons. Indeed, the cyanogen compounds have a reputation so sinister that the proposition to employ the deadliest one in public health work is not likely to be received with enthusiasm. In books on toxicology, hydrocyanic acid and potassium cyanid always appear as the twin demons of sudden death, though no proof is asked or offered of their title to that terrible supremacy. Having inhaled the gas often and in considerable amounts without noteworthy discomfort, I have diminished somewhat my fears of its imputed energies, though its real power must always be respected.

In electroplating works, in photography, in engraving, and in various other industrial arts, enormous amounts of potassium cyanid are handled by working people of all grades; dangerous cyanids enter into the manufacture of certain explosives, and are present in aromatic substances in common domestic use; and yet there is no considerable literature of poisoning by cyanogen.

Since 1897, hydrocyanic acid gas has come into extensive use in the disinfection of orchards and of nursery stock, the dangerous gas being generated on a large scale by inexpert persons, but not a single fatal accident has yet been reported.

The gas has found a wide application in greenhouses, against the enemies of fruits and flowers. In order to avoid injury to plants some caution must be observed as to the amount of gas, as to period of growth of plants, as to surface moisture, and as to exposure to sunlight soon after fumigation; but the precaution of 10 minutes' free ventilation of the fumigating room seems to be sufficient for the safety of those who are engaged in the work. In has been used in large flouring mills to eradicate the weevil and other insect pests. It has done this work without injury to the grain or flour exposed in fumigation. In South Africa, hydrocyanic acid fumigation is said to be employed to rid railway coaches of bedbugs, which are particularly troublesome in that climate. It has in a few instances been successfully used to kill the rats and mice in farm buildings and mills. Some of the earliest demonstrations of the usefulness of this gas to nurserymen and orchardists were made in Maryland by W. G. Johnson, State Entomologist; and through observation of his work I have been led to look into the effects of hydrocyanic acid gas upon bacteria.

The physical properties of hydrocyanic acid are pretty well known. The gas is lighter than air, and has an agreeable aromatic odor, quite familiar in the flavoring essence of bitter almond.

It is best generated by the action of dilute sulfuric acid upon potassium cyanid. The proportions are: potassium cyanid 1, sulfuric acid 1.5, water 2.25. Potassium cyanid suitable for this purpose costs about 32 cents a pound, and is 98 per cent. pure. Sulfuric acid of the best commercial grade, costing about 2 cents a pound in carboys, will do this work very well. The chamber acid used in fertilizer works is unsuitable.

The first step in making the gas is to dilute the sulfuric acid. This must be done slowly, and it is best to add the acid to the water. A good deal of heat is generated, and for this reason glass vessels should not be used for diluting the acid. Vitrified clay jars bear the heat very well. The whole amount of cyanid is put into the dilute acid at once. As the evolution of gas is very rapid, one must be ready to leave the spot immediately, or what is butter, the cyanid, tied up in a bag, may be lowered into the acid by a cord passing outside the room.

The amount of gas used for plant fumigation, expressed in terms of cyanid, is about 25 grams per 100 cubic feet. For room disinfection a greater amount is necessary.

In my first experiments the infected materials were enclosed in a 1500 c. c. hydrogen jar, and exposed to the gas for 24 hours. The organisms used were B. typhosus 5 times, B. diphtheriæ 7 times, B. subtilis 7 times, B. coli communis 4 times, Staphylococcus pyogenes citreus 4 times and aureus 4 times. The vehicles were glass rods; bits of linen, wet and dry; cotton swabs on iron wire, both wet and dry; cultures of the various organisms upon beef tea, plain agar, sugar agar, or blood-serum. In all of these experiments, except 2, the amount of gas used was generated from 10 grams of potassium cyanid. Two experiments were made by exposing articles to the residual gas in the jar after the conclusion of a previous experiment.

Without giving the details of these observations it may for the present suffice to say that the resistant organism was B. subtilis, which was killed but once in 7 trials. Staphylococcus citreus was found alive 3 times, and Klebs-Loffler bacillus survived one experiment. B. typhosus and B. coli communis and Staphylococcus pyogenes aureus were killed every time.

Iron wire, when wet, was attacked by the gas, and received a thin coat of Prussian blue. Paper labels on the test tubes exposed to the gas were stained brown. Some cotton which remained in the bottom of the jar through several experiments, took on a dark brown color, and the fiber became brittle. Cultures in unstoppered test tubes were inhibited or killed. Sugar agar in tubes took a reddish brown stain to the depth of half an inch or more. In this stained medium B. subtilis did not grow, though transfers from the stained area grew. B. coli did not produce gas in sugar agar when exposed to hydrocyanic acid gas, but transfers grew in a characteristic manner.

The single specimen of Klebs-Loffler bacillus which resisted the gas, was a beef tea emulsion from a 24-hours' growth on serum, dried upon a glass rod. Another specimen of the same sort exposed at the same time was killed. Linen infected with the surviving Klebs-Loffler bacillus in beef tea, was rendered sterile by 24 hours' enclosure in the jar, without the addition of any fresh gas.

The next experiments were made in a room of about 1,400 cubic feet capacity, without plastering, having a brick end, and 3 sides of plank, with one small hinged window, and one loose door. Infected materials were distributed to all parts of this room and exposed to the gas released from 600 grams of cyanid. Of 7 swabs and rods of B. diphtheriæ but one failed to grow after 24 hours' exposure. Five specimens of subtilis all grew. Of 2 aureus rods one grew and one did not. One specimen of B. coli was uninjured. This trial indicated that the amount of gas recommended for plant fumigation is far too little to destroy bacteria under such conditions as this room presented.

Another distribution of infected articles was made and exposed to the gas from 1,500 grams of cyanid. There were 11 pieces of linen infected with Staphylococcus pyogenes aureus. Five of them were exposed in open petri dishes, the other 6 were left in the 2 test tubes in which they had been allowed to dry. The 5 in dishes were sterile; the 6 in the tubes grew aureus feebly.

Three glass rods with aureus, 3 with B. coli, 3 with B. diphtheriæ, 3 with B. typhosus yielded no growth. Two pieces of linen with B. diphtheriæ were exposed in open dishes, and 3 pieces were left in a test tube. All these were killed. Three bits of linen infected with typhoid bacillus were found sterile.

An experiment was then made in the same room with 1,200 grams of cyanid. Of 5 diptheria rods 4 were killed, and 1, accidentally contaminated, was not tested. Four bits of linen infected with diphtheria bacillus exposed in open dishes were all killed. Several pieces of linen containing diphtheria bacillus were suspended in 2 test tubes, open end downward, from the ceiling. These tubes were poured with bouillon, and both grew diphtheria bacillus.

Five typhoid rods were all sterile. Four pieces of typhoid linen exposed in a covered petri dish, cultured separately, all grew. Typhoid linen, exposed in an open inverted test tube, grew.

Of 4 subtilis rods, 1 was sterile. Subtilis linen exposed in open tubes, mouth down, grew.

Of 4 aureus rods, 2 on the floor grew, 1 on a table grew, and 1 near the ceiling did not grow. Four bits of aureus linen in open dishes were sterile.

Three coli rods were killed. Of 4 sugar agar tubes inoculated with B. coli, 3 were suspended inverted near the ceiling over the gas jar, and 1 was kept as a control. The 3 exposed tubes showed no growth in 3 days after exposure. The control produced gas.

Another experiment was made with 1.500 grams of cyanid. Of 6 bits of typhoid linen, 3 wet and 3 dry, all were killed. Of 10 typhoid rods, 9 were sterile, and 1, accidentally contaminated, was not planted.

Four pieces of diphtheria linen, exposed dry, were sterile. Five diphtheria rods were sterile.

Of 10 pieces of aureus linen, 5 wet and 5 dry, all were sterile.

In all these trials media reported as sterile were kept from 3 to 5 days, and in cases of any doubt specimens were fixed and stained.

These experiments tend to show that, against organisms no hardier than B. diphtheriæ and B. typhosus hydrocyanic acid gas is about as affective as formaldehyd, though a greater amount of gas is needed, and perhaps a longer exposure. One gram of cyanid per cubic foot of space is probably the correct proportion. No claims for great power of penetration can be made for hydrocyanic acid as against bacterial life. A gaseous germicide with great penetrating power is as yet a chimera. The failures to kill Klebs-Loffler, typhosus and coli bacilli in these experiments happened under just such conditions as would have led to failure with formaldehyd. The infected linen exposed in test tubes contained organisms protected from the gas at the points where the medium dried in contact with the glass, and such organisms would as certainly have survived formaldehyd fumigation, as the experience of the City Health Department of Baltimore shows. Such indeed was the result expected in these experiments, though it was thought that the hydrocyanic vapor, having much moisture land no tanning power, might perhaps penetrate better than formaldehyd.

Against animal life hydrocyanic acid has strong diffusive energy, as was proved in one of Johnson's experiments. A large tobacco warehouse was so thorougly infested with insects, that the owner was about to abandon both the stock and the building. Much of the tobacco was in hogsheads, and although these were not unpacked, the infection was completely eradicated by a single fumigation with gas in less than half the proportion used in our experiments.

The need of a gaseous germicide which shall also be destructive of animal life is becoming more and more impressed upon sanitarians, and it seems not unlikely that hydrocyanic acid gas may to a considerable extent meet this need.

APPENDIX.

FOURTH SEMI-ANNUAL MEETING

OF THE

MARYLAND PUBLIC HEALTH ASSOCIATION.

BALTIMORE, *December 4, 1900.*

The opening session, held in the hall of the Medical and Chirurgical Faculty of Maryland, 847 N. Eutaw street, was called to order at 2 P. M., by the President, Dr. Howard Bratton, of Elkton.

Municipal Control of Slaughter-Houses and Meat Inspection by Competent Veterinarians and Microscopists.

DR. JOHN C. HEMMETER, Baltimore.

I hope you will not expect of me an elaborate and well-worked out report on this subject. What interested me in it especially was a few weeks of study in a German slaughter-house, which was undertaken with the view of studying the animal parasites of the intestines. I went to the slaughter-house of Leipsig and afterwards to that of Dresden, and I was greatly impressed with the care taken in the inspection of meat. This was carried on, not by veterinarians but by pathologists, men experienced in the study of the normal and diseased tissues. I had for some time previous to this trip worked in the abattoir of this city, which is situated on Gwynn's falls, and I was at once strongly impressed with the differences between the two institutions. In the abattoir of this city I never at any time (and I went there twice a week for three months, and then after a lapse of a month renewed my visits for another month) saw any inspection of the health of cattle or animals slaughtered at that place. You may be aware, too, that we have in this city quite a number of private slaughter-houses over which the city has no control whatever. I have questioned some of these butchers, and they say they practically do what they please, that their reputations are at stake, and that when a piece of meat appears to be diseased they throw it out.

Now no great reforms can be brought about in this country by the stroke of a pen nor by the resolutions of any society, but they can be obtained through the education of the public

As is probably well known to you, the great Union Stockyards are just southwest of the city boundary and near by is the only large public slaughter-house, the Union Abattoir. The number of cattle received at this place is over 5,000 per week. As to the general arrangements and treatment of cattle at this place, I have no comment to make; I dare say it is as good and as bad as the average of its kind. The cattle which came under our observation varied—some of the very best, and, unfortunately, some of the very worst. It is needless to state that it was impossible for me to inspect all the cattle at this place on any one day. Such would be a Herculean task, and would easily require the attention of a number of inspectors. I am told that the State Board of Health has but one inspector at its disposal; you might as well attempt to police this city by a dozen men. While this lone inspector, whose careful and conscientious work I had frequent opportunities to observe, is at one part of the yard, suspicious cattle may readily be moved about so as to escape his attention, and it is perfectly feasible for diseased organs and even entire carcasses to be secreted, and later put on the market as food. I am also informed that the inspector's duties frequently call him to other parts of the State, when there is little or no hindrance to the disposal of unsound meats. Add to this 240 private slaughter-houses within the limits of Baltimore city. Naturally the owners do not kill at the convenience of the inspector, so what occurs at some of these places can be left only to the imagination.

From the nature of things every slaughter-house may be considered a center of infection. This point has been ably demonstrated by Dr. Chas. W. Stiles in a paper read before this association. He laid especial stress on the fact that trichinosis is widely spread, not merely by hogs being fed on the diseased offal of other hogs, but also by the great number of rats which infest these slaughter-houses. In turn these rats infect other hogs. That man, in turn, may be infected by the consumption of the flesh of an infected pig is well known. Numerous other diseases are spread in a similar manner, viz., tuberculosis, hydatid disease, tapeworm, etc.

On account of the limited time at my disposal, the number of diseased cattle, which I was enabled to examine, was not large, but I am sure many cases, as extensively diseased as those I report, entirely escaped observation. Although on many occasions several successive hours were spent at the yards, but few cattle could be examined, especially when being slaughtered, as it was necessary to watch a suspected animal from the time it was driven into the killing pen until it was dressed, if we hoped to obtain any of the organs for microscopical study. Diseased livers, lungs, spleens, etc., were occasionally noted hanging about the slaughtering rooms, and often by mere chance the inspector found these, and by condemning them, prevented their sale and consumption as food.

Frequent visits were made to the refrigerating rooms to inspect the meat, and many specimens were taken for study, as a result of which several carcasses were condemned. Some of the sides of beef showed the results of extensive antemortem bruises.

It does not require a trained veterinarian to decide that such animals as the photographs show are diseased and entirely unfit for food. A good beef should dress at 600-700 pounds. Many of these would scarcely reach 250 pounds.

Our studies were directed chiefly to *two* diseases—tuberculosis and actinomycosis.

Tuberculosis is the commonest and one of the most fatal diseases which the human race endures: it has caused more deaths than the combined wars of civilized and uncivilized nations: it chooses its victims among the young and immature rather than the aged and decrepit. It is undoubtedly the greatest scourge of modern days, attacking not only man but also his food—cattle.

That tuberculosis in cattle is a menace to public health few will deny. That the products of tubercular cattle—milk, cheese and butter—contain virulent tubercle bacilli, the cause of the disease, has been amply demonstrated. Lydia Rabinowitz, of Berlin, has but recently shown that the milk and butter, bought in open market in Berlin, occasionally shows evidence of this disease. If such conditions exist in that city, where inspection is infinitely superior to our own, what may we expect in this city? That the tuberculosis of cattle and man are due to one and the same organism but comparatively few doubt, and that tuberculosis of the intestinal tract may be acquired by drinking the milk of tubercular cows has unfortunately been conclusively proven. It is only necessary to consult the reports of the Royal Commission on Tuberculosis of England (1898) to see that while general tuberculosis in the last twenty-five years has decreased 39 per cent., that of intestinal tuberculosis has decreased but 8.5 per cent. If infants derive tubercular infection only from their associates and elders, it is only fair to expect the diminution in prevalence to be in proportion to that among their elders. Of course, there are other and more frequent sources of tubercular infection than cattle, but that is no reason why this one source should not be removed.

Photograph No. 2* will show you a specimen of a tubercular cow observed in the pen at the stock yards. The poor bone rack was scarcely able to stand up, and on its sides were noted abrasions where the bones had literally penetrated the hide. On applying the ear to the chest all the physical signs of the disease could readily be made out. What became of this particular animal I can not say, but that it was put on the market as food I do not doubt. Specimens of lungs of cows were obtained by myself and by the State Inspector, Mr. Mitten (to whom I am indebted for many diseased specimens), and on microscopical examination were found to present various stages of tuberculosis.

The question whether tuberculosis can be transmitted to man by meat of tubercular cattle is an important one which is not yet decided. It may safely be said, however, that meat which contains tubercle in any stage and in which the tubercle bacilli are found ought to be condemned as unfit for human food, even though we are not prepared to say that its consumption would give rise to the disease, on the general grounds that the flesh is so deteriorated as to possess no longer the nature, quality and properities of wholesome, nutritious meat.

One other disease of which I wish to speak in some detail is actinomycosis or lump jaw.

This disease is due to a fungus, the Ray fungus, that grows on vegetation, notably barley, rye, and certain varieties of grasses. It gets into the mucous membrane of the mouth and develops there; however it may also reach the walls of the stomach or the lungs. It forms large tumors, usually in the jaw, which finally suppurate. Animals affected with this disease emaciate rapidly and readily communicate the disease to other animals with which they come in intimate contact. Numerous cases of human actinomycosis have occurred in men whose business it is to look after cattle. While it is doubtful if the disease can be transmitted to man by eating the flesh of diseased cattle, still, for the same reason that tubercular cattle are unfit for food, these animals, when extensively infected, should be condemned. I believe the number of animals affected with this disease which come into our markets have notably decreased in recent years, yet the Inspector, Mr. Mitten, within a period of a few weeks observed six cases at one slaughter-house. I had the opportunity to examine the heads of all of these animals and in the pus obtained from the jaw found the Ray fungus. These animals presented various stages of infection, some mild, others very extensive. Photograph No. 3* shows one of the most extensive. The large lump at the side of the lower jaw shows an ulcerated area about three inches in diameter. Another animal showed, besides a large abscess in its jaw, numerous smaller abscesses over its head, doubtless secondary infections. With one or two exceptions the animals were markedly emaciated, one large steer weighing only about 250 pounds. All of these cattle were condemned by the State Board of Health.

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*The illustrations to this article are found between pages 89 and 100 of the first half of the book.

I did not have the opportunity to study the flesh of swine for trichinæ, but who of us doubt that they could be found if looked for. The United States government demands that all carcasses sent abroad shall be carefully inspected both macroscopically and microscopically for trichinæ, for foreign governments refuse to receive any other than inspected meats. But, unfortunately, it seems that we are inclined to act on the principle that anything will do for home consumption. The former problem affects our pocketbooks, the latter merely our health.

I might mention other diseases of cattle which act as a menace to mankind, probably some of them will be brought out in the discussion to follow, but enough has been said to show the importance of a more rigid system of inspection of meats in this city and State.

One other point worthy of mention is the use of dye stuffs to color meats, particularly sausage. I am not prepared to state the exact nature of the dye used, but one butcher acknowledged that in a short while the dye had corroded a metallic trough through which it ran. This is in direct defiance of article 43 of the laws of Maryland relating to public health, which says: "That no person shall mix, color, stain or otherwise sophisticate any article of food or drink with any other ingredient or material for the purpose of gain or profit, nor shall sell or offer for sale, or order or permit any employe or other person to sell or offer for sale any article so mixed, colored or stained, unless such article be so manufactured or offered for sale under its true and appropriate name, and unless a notice that the same is mixed or impure is marked upon each package and remain at all times visible, or unless the person purchasing the same is fully informed by the seller of the true name and ingredients of such article of food or drink."

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*See page 98 in the Report.

Article 51 says "that if any person shall sell or offer for sale any kind of diseased or unwholesome provisions, such as poultry, game, flesh or preparation of flesh or other things intended to be used as human food," he shall be punished by imprisonment or be fined, and the unwholesome provisions offered or exposed for sale shall be forfeited and destroyed.

That these laws are not carried out is not the fault of the city or State authorities. They are hampered in their work by the lack of inspectors. Does it not seem almost a folly to condemn one animal and allow a score of others equally as bad to be put on the market as human food? Many of the States about Maryland carry on a more rigid inspection of cattle than we, at present, are able to do. What is the result? Diseased cattle, which are prohibited from those markets, find a welcome in our State and city. We become the dumping grounds for the refuse of other States. More than one butcher makes a practice of handling poor and diseased animals to place them on the local block, because he can buy them cheaper than healthy animals, and the customer finds it difficult to tell the difference between good and poor meat.

Even with a large corps of inspectors, it is obvious that meat inspection must be inefficient when there are a large number of private slaughter-houses. The first step therefore is to reduce the number of localities from which infection may spread, and there is but one way to do this, namely, to compel all the butchers in town to do their killing at the same slaughter-house. If the slaughtering is all done at one place, it is comparatively easy to control the class of animals used.

In conclusion, I would like to state the regulations now enforced in Leipzig, Germany, where the inspection of meat is thoroughly carried out:

1. No private slaughter-houses exist.

2. All slaughtering is carried on in the public slaughter-houses, under sanitary conditions.

3. All meats brought to the town have to be taken to the central office for inspection before being sold.

4. Microscopical and other examinations of meat are practised systematically.

5. All meats passed as sound are stamped in several places with the official stamp, showing that it is fit for human food.

6. Bad meats are taken away and destroyed by the municipality.

I have no intention of offering any suggestions to the city and State health authorities as to what measures are to be taken to eradicate the evils now existing in this State. They are more competent to judge than I. But I do ask the public to demand of the proper authorities that sufficient resources be put at the disposal of these boards in order that their work may be effectively carried on.

It is impossible for me to state the exact number of live cattle examined, as it was our custom to go through the yards and examine carefully only those cattle which showed some sign of disease or marked emaciation. The entire yards were examined at each visit. Many specimens were obtained by myself, and many more were sent to me for microscopical examination.

QUERY: By the Frederick City Board of Health. Granted that there can be no such thing as a strictly sanitary slaughter-house in the heart of a city of the second class, what is the most practical plan of remedying such a nuisance?

Discussion.

DR. FULTON: The gentleman who proposed that question, the health officer of Frederick city, is not present, but I should think the whole subject might well be open for discussion at this time.

THE PRESIDENT: It is a specific question and should require a specific answer, but if the inquirer is not present I think we may proceed to discuss the entire question.

DR. BILLARD: When the reader of the last paper stated that there were 245 private slaughter-houses in the city of Baltimore I was very much surprised. In the District of Columbia there is but one slaughter-house and no others will be permitted.

DR. OSLER: Who rules the city of Washington?

DR. BILLARD: The District Commissioners. In the town I represent there are no slaughter-houses within the corporate limits. It seems to me if there are any in the city of Frederick the authorities there should designate some place outside the city limits where all slaughtering should be done and let that place be put under the care and inspection of the sanitary authorities

In regard to the inspection of meat, I am heartily glad that question has been brought up. It has occurred to me often that there should be some rigid inspection applied to meat and to all articles of food in the small towns as well as in the large cities, and I have been thinking over a plan by which that might be accomplished. They can not procure the services of a bacteriologist, and I hope that some feasible means will be suggested by this society whereby such an inspection could be carried on in the small town as well as in the city.

Dr. Osler: This is a matter of great public importance and I would like to make a few remarks upon it because it has a direct bearing upon the health of our citizens. That 245 slaughter-houses exist in Baltimore is merely one more indication that Baltimore is still a community of villages. Villages have private slaughter-houses, cities have public abattoirs. So long as the citizens of Baltimore prefer the customs of the village they will continue to allow any and every man to slaughter animals when and where he pleases.

The number of diseases that appear in this city every week directly due to the lack of meat inspection is doubtless great. I think tuberculosis might be left out of consideration altogether, for it is rare that tuberculosis comes from the eating of meat of tuberculous animals. Animals in which the muscles are infected can rarely be offered on the block, but the parasitic diseases, of which we see a great many, deserve serious consideration. I suppose there are 500 cases of tape worm seen annually in this city, every one of which could be prevented by a proper system of meat inspection. The question of trichinosis is interesting also, because we have been finding of late years a considerable number of sporadic cases; we have had seven in the Johns Hopkins Hospital during the past year.

But this we have to bear in mind, that unless the inspection is done thoroughly and rigidly, it is apt to be worse in its result than no inspection at all. It is really a great treat to visit a well-conducted abattoir. In Berlin, the system of inspection is admirable; a large staff, such as we could never maintain here, is on duty with a staff of trained veterinarians to assist them. The cleanliness with which everything is done is really a very great lesson to all visitors.

It might be possible to secure some improvement on our present conditions if we could have the Mayor and City

Council to hear these papers, but the interest these men take in questions of public health ia evidenced by the fact there is probably not one in the room today.

Dr. Fulton: In respect to the probable destination of the extremely emaciated cows described, it is likely that those animals do come into the meat shops. Such cows are bought by butchers here, and are made up into what is technically known as pudding or sausage, and no degree of emaciation seems to debar the animals from that class of service.

There are a large number of villages in this State which do not permit any slaughtering within their corporate limits. In the report for 1899 you will find a long list of towns under 2,000 inhabitants that do not permit it, and a small list of towns between 2,000 and 4,000 and one over that size, the town of Cambridge. In some towns of 2,000, and even 4,000, slaughtering is permitted. If you compare the list you will find that the younger towns have profited by the experience of their elders and have prohibited slaughter-houses.

The dangers of the country slaughter-house have not been alluded to. Perhaps the worst of all is the little country slaughter-house with a sloping porch at the back, down which the waste material is pushed into the little stream that passes behind it. Of one of these it is said by the health officer of the place, that "In winter this stream can be crossed on frozen entrails." I was in such a slaughter-house a few weeks ago chasing a "pudding" cow (the technical term for the bone racks that are made into pudding and sausage), and the first sign of human life we found was a woman sitttng in the kitchen door, behind which was a little shed that led directly into the slaughter-house. Almost within arms length of the kitchen the slaughtering was going on, while right under the shed was a little girl making butter. Calves, sheep, hogs and beeves were all being butchered on a small floor, not more than 25 feet square.

It has been said that there is one inspector at Claremont ordinarily. There are two, and their work contrasts strongly. We have an inspector who can put in from 50 to 60 days in the year at that abattoir. To give you an idea of what he does in that time, I will read you the report of how many cattle he has inspected: "174,024 in 24 days during the year 1898"—a mathematical absurdity. He perhaps saw that many animals, and could pick out such as were so poor that they could not keep up with the procession, but that is as far as he could go.

There is another inspector at the Union Abattoir, and he has little or nothing to do; that is the Export Inspector. The cattle that are going abroad have been selected before they arrive in Baltimore, and are submitted to him for final inspection. His work is as easy as the other man's is hard.

Dr. Welch: Perhaps a word as to the actual dangers to health from the diseases of animals is best demonstrated by reference to the animal parisites, the tape-worm, the trichinea, etc. Of course, it is demonstrated that there is a danger of transmitting tuberculosis by butter and milk, but the danger is not so great through the use of butter as was at one time supposed. There is scarcely any danger of contracting tuberculosis by eating the meat of tuberculous animals, and yet one would not care to eat such meat knowingly; indeed, it is loathesome to think of eating the meat of an animal sick of any disease. But the argument should not be placed solely upon the dangers of using such meat. Undoubtedly the key note has been struck in the insistence upon doing away with private slaughter-houses. It is really an uncivilized condition that this city should possess so many of these houses. This question has been debated before, and a meeting was called a few years ago to consider it, but we struck the question of private interests, and were balked from going any further. The question should be emphatically brought to the attention of the Legislature. They should be shown that it is an outrage to allow these private institutions to exist, and the State and City Boards of Health should be provided with the means for conducting a rigid meat inspection. The means at the command of the board at present are entirely insufficient, and the practice is in no sense of the word an inspection of cattle; of course, the board does all it can with the means at hand. We should then base our arguments partly upon the actual danger to health and partly upon the belief that no one should or would, willingly, consume the meat of diseased animals.

The Freibund works very well in Germany, so that people who otherwise could not get meat, may have some at a low price, but it is sold to them for what it actually is, diseased meat, and the purchaser is cautioned as to the necessity for thorough cooking of it. I quite agree with Dr. Hemmeter that it is out of the question to introduce that method into this country. The poor people here want nothing that is marked diseased or that is even marked second class.

Dr. Hemmeter: We know from experience that when we wish to accomplish anything with our "City Fathers" it requires time, and we have to keep pegging away at them and not be discouraged by a few refusals. I would move that a committee of three be appointed from this society to wait on the City Council and suggest to them, first, the abolition of private slaughter-houses; and, second, the appointment of a number of pathologists proportionate to the number of animals killed per day, so as to make it possible to examine those animals. I do not want to determine the number because I do not know how many animals are killed per day in the city, nor how many animals a man can satisfactorily examine in a day. Each pathologist should, however, be a thoroughly competent man, and he might, by the aid of subordinates, so arrange the work that he could pass upon a great many more animals than he could actually see himseif.

The motion was seconded by Dr. Fort, and adopted.

Mr. Hartshorne: There is one question I would like to ask, and that is: Is it correct to grant the statement contained in the query by the Frederick City Board of Health, "That there can be no such thing as a sanitary slaughter-house?"

Dr. Fulton: I think the questioner did not mean that there could be no such thing as a sanitary slaughter-house, but that such a thing could not exist in the heart of a city of the second class.

The Baltimore Water-Supply and its Pollutions.

Dr. Chas. O'Donovan, Baltimore.

I think that inasmuch as we are learning about the condition of affairs concerning what we have been eating, it is well that we should take into consideration what we are drinking also in Baltimore. This, I consider a very necessary element in the knowledge of all citizens, inasmuch as we have the idea that we possess in Baltimore the most magnificient water supply in the world. I will venture to say that after speaking a few words about water supplies in general and particularly about our own, you will be ready to suggest some means by which our supply may be rendered much more satisfactory than it is at present. You know, of course, that our supply comes from the water sheds emptying into Lake Roland, from the Gunpowder river emptying into Loch Raven.

First, however, let us clear the ground a little by a brief reference to water supplies in general. They should be considered in general under two heads, the quantity of water to be furnished and the quality of that water. Now there may be a great difference in the supply of a city situated as we are, due to the way in which the water is supplied to the city. The origin of the supply begins of course in storms and rains, the water passing through the soil to be returned to the surface again by springs to supply the small streams, and from the larger of these to be pumped into reservoirs and then distributed through the mains of the city system. If the weather continues dry for a long spell there will be a shortage in the supply of water. Of course the man who lives in the city thinks a spring is a constant water supply, but those of you who have lived in the country know that springs go dry at times. The reason of this is that the water that falls upon the earth and should be retained there, to be returned through the springs, is drained off, and unless provision is made to hold it it escapes, so that in the succeeding summer when the hot weather comes on the springs go dry. Now it is well know, too, that the growth of trees and forests have a great deal to do with this matter. In such districts as have an abundance of trees the water is retained in the spongy soil and returned in pretty even quantity throughout the year to the streams. In regions where the land is thoroughly cultivated the rains fall upon ground where evaporation can go on rapidly and where also from the lack of spongy soil the water can run off easily and quickly. So much for the quantity of water.

The quality too, is very variable, but for different reasons. We may consider the quality first from the point of mechanical suspension of undissolved material in it. In the land which is covered with forests the soil is protected by the dead leaves, and the network of roots acts like a large sponge, so that the water is thoroughly filtered and aerated and it reaches the water courses in a clear condition. Quite different is the water found in the streams of an open country where the rain water runs quickly over the surface soil, carrying with it a great quantity of the muddy soil into the streams and lakes, which become more and more shallow, until they fill up with mud and form instead of a deep-water reservoir one of fictitious depth, containing much less water than it is supposed to, until at last in the hot weather it fails entirely. In such a country, too, the ground is extensively fertilized and the storm water carries off much of the fertilizer into the streams, to be carried in a more diluted form into the reservoirs and distributed to the city through its mains. This makes up what we may call the mechanical change in the quality of the water, but there is a greater difficulty to be met, in the more dangerous bacteriologic changes in the water.

In the largely inhabited regions, if the privies happen to be near the water-courses, or if small towns be built along the stream within the water-shed, with the first storm all the refuse and overflow from the privy vaults is washed down into the reservoirs and thence into the city. The process of purification that interferes with this is the process of sedimentation.

Let us see how our own water supply is affected by these considerations. You know of course, that we are supplied from two sources, Lake Roland and the Gunpowder river. Lake Roland is situated about eight miles out from the city and is supplied by three streams, one from the north, one from Green Spring Valley, and one from the neighborhood of Towson. Now each of these supplies is liable to very serious contamination, but perhaps the Towson branch is the most seriously affected of all. The town of Towson is situated on high hills that drain directly into the stream about a mile from Lake Roland, and with every storm the filth of the town is washed down into the stream, to be mixed in Lake Roland with the water from other regions, and except for the process of sedimentation, to go on to the city supply. Above Lake Roland is the town of Lutherville, a notoriously unhealthy place; they have a great deal of typhoid, and send to the hospitals of Baltimore entirely too large a number of cases for such a small place. Here too, with every large storm, the filth of this town is carried almost directly into Lake Roland. In addition to that this branch of Lake Roland also passes through a very large farming district. The same thing may be said of the western branch, which comes from Green Spring Valley. No region about here is more highly farmed, and not only do we get the filth of the farms of this valley but that from a small town called Rockland, at the head of the stream. It is well-known that whenever there is a great deal of typhoid in these two towns there is apt to be an increase of the number of cases in Baltimore, and some people have the temerity to suggest that it is a case of cause and effect. There is also in the Green Spring Valley a large hotel, which, according to its advertisements, delights in having the purest water in the world. I believe the water there is good, but there are three or four hundred people sheltered in the house every summer and the sewage of the place is carried off back of the house somewhere, and what happens to it I am not able to say, but it seems to be something of a secret, which guests are not urged to investigate. It may be added to the drainage which goes to pollute the lake. So much for the surroundings of Lake Roland, the water-shed of which is practically a farming region throughout. So much filth is carried down that every four or five years it is necessary to clean out the lake, and only last summer it was found that more than half the capacity of the lake had been destroyed by such an accumulation.

Fortunately we have in the Gunpowder supply a sufficient supply for this city for an indefinite period of time if we properly preserve it. The lake itself is magnificently situated upon high hills and is surrounded by forests. Inasmuch as the water flows from as far north as the Pennsylvania State line, it is necessary to remember that the upper portion of Baltimore county is a rich agricultural region and an enormous amount of soil and filth may be carried down into Loch Raven. Now not only does this kind of contamination occur, but along the river are situated a number of small towns as unfortunately built as it is possible for them to be. There is a mill about two miles above the head of the lake around which has grown up quite a respectable town. It is directly on the falls of the Gunpowder, the hills around it are very high, the roads that lead to it follow natural water-courses, and the houses have been built along these roadsides, so that there is a natural and easy flow into these streams of the filth and refuse from the houses. Another mill with a similar small town is about two miles further up the stream. Those of you who bave seen a country town in the winter season know how much filth can accumulate to be washed into the streams when spring opens. These are the two most dangerous places on the Gunpowder supply, but at Cockeysville, Ashland and Texas are minor sources of contamination that must also be reckoned with. At once you will see how such sources of contamination may lead easily to the distribution of disease through drinking water. Typhoid fever is the one we should most naturally think of, but cholera, if it should find its way into any of these towns, might readily be spread through the city in exactly this way.

Having gotten the water into the city reservoirs, we should be more careful about them. Those of you who have driven about the reservoirs in the park must have thought of the possibilities of the infection of that water. Take one item alone, the droppings of horses are mixed with the dirt of the roadway, and with each puff of wind clouds of this dirt are carried into the water, and some of it, more or less diluted, is distributed through the mains with the drinking water. There is one more important source of contamination that occurs after the water enters the mains. I am perfectly sure that a large number of cases of typhoid fever occurring in this city originate in the back yards of the property where there is, perhaps, a leak in the supply pipe of such a nature as to create at times a back suction, and the soil around the pipe being contaminated, infects the water.

After this hasty resume of the conditions of our water supply, let me say that certain remedies appear to be quite proper to prevent such contaminations as I have described. For instance, to prevent variation in the quantity of water, I would suggest that certain lands be purchased by the city, reclaimed from farming purposes, and allowed to grow up into woodland. Such land can be purchased for a small sum in certain parts of the country, and fortunately in just those parts where we want it, viz., on the hill sides, where the water can easily be stored up in the winter and spring for use in summer.

It is within the bounds of possibility, and it is advisable for the city to go into the market and to buy up, at suitable times, land for the planting and growth of forests for this purpose. This has been tried elsewhere and found to increase and to improve the supply of water.

Then, in reference to the quality, the city should be prepared to protect its water supply, not only by inspection, which is possibly very thorough now, but to protect it against contamination and the filling up of the reservoirs by mud, etc. With catch-basins we could secure sedimentation and clearing of the water before it reaches the reservoirs. Against bacterial contamination, of course the most important thing would be to do away with the sources of contamination. This is somewhat difficult, because the towns have, some of them, been located for a long time, but it is certainly possible for the city to attempt, and, if necessary, to proceed by law, to do away with the sources of contamination. Unless we protect ourselves by the most rigid inspection, and perhaps even by doing away with these towns, they will continue to grow, and, with that growth, to increase the danger. The privies emptying into the streams should be abolished. Unless such contamination can be prevented we will have to fall back upon filtration. It is not necessary to enter into a discussion of that point now.

The points I want to impress upon you are the necessity of securing for all time a sufficient supply of water, and the importance of protecting that supply. We are apt to brag about our great healthy city, but it is not as healthy as it should be, when we come to compare it with other cities; it has no sewerage system, and the sources of our drinking water are rapidly becoming a system of open sewers. It seems to me this is an extremely important subject, and I offer it for your further consideration.

Nuisances and Sources of Danger on the Water-shed.

MR. ALFRED M. QUICK,

Engineer of the City Water Board.

I have been out of town for ten days, and have not had time since my return to prepare a paper. I thank you for the opportunity, however. to make a few remarks. The topic has been pretty well covered by the speaker who has preceded me. Jones' falls shed, as the previous speaker has said, is thickly populated, and presents all the conditions for pollution of the water, but the conditions on the Gunpowder are not quite so serious. The water-sheds have been inspected in years past, and within the past few years the State Board of Health appointed two inspectors to go all over the work. That custom held until about the time that Mayor Malster came into office. when a water-shed control was created, with four inspectors and a chief. Printed notices were served to require the abatement of any nuisance within 15 days, and prosecution was threatened in case of non-compliance. Complete records were kept of all this work in the department. What those records represent I have not had time to examine. Very shortly after taking my office I instituted a system of my own, doing away with the large number of inspectors and appointing only two, one for each water-shed. I had them start at the lowest points on the sheds and follow every stream as they came to it to its source. That has been all completed, and now the men are working on the back regions away from the streams, and nearly all the property along the water-sheds has been examined. We have made about 1,600 inspections of individual properties, and out of that number 160 were reported as maintaining nuisances, not necessarily serious. The most of these were the objectionable privies, pig-pens, barn-yards, etc. The method I have adopted is to get all the information possible about the place, and then to serve notice that the nuisance must be abated within 15 days. If it is not done, I send an engineer to prepare a map of the property, and make experiments to prove that there is actual direct connection between the stream and the source of pollution. I have not a statement with me as to the number of these nuisances that have thus far been abated. I expected from what had been told me that it would be a very difficult matter to get convictions in these cases, and I have been going over them very carefully with the idea of picking out the difficult ones to make tests of. A case occurred very recently where the discharges of a typhoid patient were traced directly to the Towson run which flows into Lake Roland. The owner of the property was a wealthy man, and as soon as notice was served upon him, the nuisance was abated. There was no difficulty in that case at all, and I hope that by this system of making diagrams and presenting clear statements to the owners of the property to find the most effective and economical way of abating these nuisances.

The previous speaker referred to a possible contamination from the Chatolanee Hotel. I will give my idea of the conditions from memory, which may be at fault, but my impression is that the hotel takes care of its sewage by the Waring system, and that the sewage is filtered before it discharges into the stream, and I think my inspector reported that the system was working in a satisfactory manner.

The Baltimore city drinking water might be judged, from the remarks of the previous speaker, to be seriously contaminated.

I should be inclined to doubt that. In the first place, as to contamination from the sediment, the sediment at the bottom of Lake Roland was examined three years ago and shown to be entirely harmless. The amount of sediment that has been allowed to run into the lakes is undoubtedly a detriment to the system, and should have been taken out every year. At Loch Raven there have been spasmodic efforts to clear it out, as the storage capacity has been three-fourths eliminated. The machinery used, however, could not have done the work in 20 years. Next year I expect to put in a plant there that will cleanse it within two years. As to whether the sediment there is a menace to health I am not able to say.

I understood the previous speaker to say that the only process of purification that went on, so far as our supply is concerned, was the process of sedimentation. I am not a bacteriologist, but from what I have gathered in reading on the subject, I have understood that sedimentation, sunlight and the passing of water through long conduits all tend to purify the water. I believe some experimental work has shown that sunlight destroys 90 per cent. of the bacteria to the depth of 20 inches. We have from Jones' falls a 6 mile conduit and from the Gunpowder a 10 or 12-mile conduit, and a combined storage in the three reservoirs of the Gunpowder supply of about 1,300,000,000 gallons, so that there is a very large dilution compared with the amount of water drawn out each day. We have a similar condition in the Lake Roland system, which has a storage capacity of 840,000,000 gallons. The analyses made by the health department within the past two years have shown on the average between 300 and 400 bacteria to the cubic centimetre. In 1897 the colon bacillus was only detected once in 22 examinations, and then only in 50 c. c. of water, the impression conveyed being that the water was but very slightly contaminated. So I should not call the water supply of Baltimore seriously contaminated.

The city of Lawrence, Mass., not long ago put in a filtering bed with ideal conditions. They got 98 per cent. of efficiency out of that filter, and the effluent from it showed after all a greater number of bacteria than our present water supply. I could cite other instances of a similar character, which go to show that where the best systems of filtration are in use, other cities have at times more bacteria than we have here. One filter plant that I know of, with an efficiency of 99½ per cent., gives 1,700 bacteria to the cubic centimetre of the effluent. So it becomes a question whether it would be wise for Baltimore to go to the expense of instituting such a system. No attempt has ever been made to show how much worse the supply of water is near its source than it is in the city, but we intend to take a sample of water at every point of pollution and submit it to the city chemist at once for examination.

Dr. O'Donovan: I would like to know if Lake Montebello is showing any very marked amount of deposit coming down through the tunnel.

Mr. Quick: A very slight amount of sediment has been found, but the tunnel is practically clear. It has been examined every six months. Dr. O'Donovan also spoke about the dust, etc. about the lake reservoir in Druid Hill Park, but it is to be remembered that that drive is kept pretty well sprinkled and the wash from the driveway does not get into the lake, it goes into the gutters at the side of the road.

Mr. Lehman: As to the question of the contamination of our water supply, I presume it is almost entirely a question for the bacteriologist's consideration. During the last four or five years the chemical analyses of the city's water supply have been with one exception invariably the same; no matter whether we have heavy rains or a dry season, the total solids never vary. On the other hand, the presence of nitrites has been established in the Gunpowder as in the other supply, and these are supposed to be produced by the decomposition of vegetable material. So long as we have no filtration method, we can not be guarded against such diseases as typhoid fever.

Along the drive I used to have to take going to my home in the country there were several culverts built by the Pennsylvania Railroad, and I have seen masses of filth collected in these culverts and washed out by the rains into Lake Roland. I have also seen boys bathing in the Towson run, and we all know what an amount of dirt a crowd of boys can manage to throw into a stream. It would be almost impossible to entirely prevent the contamination of these streams, and the only way to guard against it is to establish a system of filtration.

Dr. Stokes: I was particularly impressed with Dr. O'Donovan's remarks on Baltimore's water supply, and I think he has demonstrated that certain contaminations do exist. If we consider for a moment the history of epidemics we shall see that any one of the 160 contaminations that Mr. Quick has found might have done great damage. You all remember the great epidemic of Asiatic cholera that occurred in Hamburg only a few years ago. That was traced to a band of gypsies that camped along the river Elbe which supplies drinking water to two cities. The disease developed in Hamburg and some 15,000 cases of the disease occurred, with over 1000 deaths. This was simply from one contamination, which did not last more than a week or so. The other city, Altona, received its drinking water from the same river after it passed the city of Hamburg, but it used a filter, and that city almost entirely escaped the cholera epidemic.

Another instance is shown in the epidemic of typhoid occurring in the town of Plymouth, where 1,000 cases occurred, and it was proven that the epidemic originated from a patient whose intestinal discharges had been deposited on the banks of the city reservoir during the winter. With the melting of the snows, the germs were washed into the reservoir and a very fatal epidemic followed. This proves that it is almost impossible for an inspection alone to prevent these epidemics originating in the contamination of drinking water. We may go on for years and years with only a certain number of cases of typhoid as the result of our local conditions, but inspection alone will not guarantee this.

It has been said that the water from the streams has not been studied. With Professor Lehman I have been investigating the water for the past six years, and we have a large number of places recorded showing the presence of 10,000 or more bacteria to the cubic centimeter. After heavy rains I have been able to demonstrate 7,000 bacteria in the cubic centimeter of Baltimore drinking water, and it is after just such heavy rains that we frequently see an increase in the number of cases of typhoid in the city.

Dr. O'Donovan did not enter upon a discussion of the question of filtration, but Mr. Quick mentioned it and rather intimated that it might be a too expensive luxury for this city. I know of no more satisfactory system for preventing the access of typhoid fever to our city, but if anything better can be suggested I am sure we would all be glad to give it proper consideration.

Of course, as Dr. O'Donovan has very clearly shown, contamination of the drinking water may also occur from the pernicious system of wells and pits which we have in this city. Many of them show a gross pollution of the soil about them. We cannot escape the conclusion that there are more cases of typhoid in the city than should exist or would exist if any or all of the suggested measures should be adopted.

Mr. Hartshorne: I have been very much interested in this discussion. We must face the fact that Baltimore has a large number of typhoid fever cases and of other diseases borne by the drinking water. It has been said that "the good is the worst enemy the best has," and there is much truth in it, for as long as the people are not alarmed by the possibilities of their condition, they are not going to take measures to secure anything better. As I understand the matter, the best way to avoid these diseases is to have a proper sewerage system and an efficient filtration plant. Every cent of money spent in an attempt to purify the water at its source is money thrown away, and such steps simply cause the institution of a filtration system to be put further off, while we know that the sooner we can secure it the better it would be for us. Everything that hinders its coming adds to the city's loss. As soon as the people become aware of the immense advantages that other cities hold over Baltimore through possessing these things, they will certainly be willing to bear the expense of getting them.

The system in use at Lawrence has been mentioned. I know that typhoid fever was at one time exceedingly prevalent in that place, but after filtration the number of cases of typhoid became so small as to be practically left out of consideration in the death rate of the city. A few cases have since occurred, but they have almost always been traced to water taken from other sources than the city supply. There has been but one epidemic here since the filter was put in use. I have been there since that time, and on investigating the plant and the causes of the outbreak of the disease I became perfectly satisfied that the epidemic was due to carelessness on the part of persons in charge of the filtration plant. In the first place the location of the filter was not as good as could have been chosen. It was placed over a quicksand, which contained a spring. They soon had to take it out for repairs, and they did this during a spell of freezing, and the water was allowed to pass through for a while without being filtered, because of the frozen condition of the soil, and the epidemic referred to occurred very shortly after this.

Dr. Bond: I would like to know from the members of the Health Department present if any effort has been made to examine the various table waters supplied by private concerns under advertisement of being particularly wholesome. They are supplied in bottles, some of them even without labels, and the public has no means of knowing where the water comes from; it may be from Woodberry, or some other nearby place. I refuse to assume that those waters are pure. In one case I had the water investigated because it smelled bad, and the answer we secured from the commercial house sending it out was that the water had spoiled. If the health authorities have any control over those things they should exercise it. I do not think a water that decomposes, so as to taste and smell badly, is a water to be trusted.

Dr. Stabler: I practiced medicine in the city of Lawrence some four years before they put in a filter plant. Typhoid was a very prevalent disease there at that time. I know also, as Mr. Hartshorne has said, that they placed the filter in a bad location for a proper experiment, and it required a great deal of watchfulness and care to keep the plant in good condition. Such care has not always been exercised.

Dr. O'Donovan: I would like to say that my paper did not deal with the matter of filtration, because I did not want to introduce that subject. I know it is a hot subject in Baltimore. I think personally that it is possible to protect the water supply if we take the precautions I have endeavored to outline. We have not the thoroughness to carry out the filtration method in this country as they do in Germany. A German will do what he is told to do in spite of everything. The ordinary American politician will not do his duty unless he is watched. If carried out properly, filtration would probably be an absolute preventative of water-borne diseases, but I doubt our ability to conduct the method thoroughly. What I wanted to say was that having a good water supply, and one that could be so easily protected, we should by all means endeavor to protect it. I believe the purchase of land would be a wise thing for the city, not only because it would protect the water supply, but because it could be made a source of income through the raising and sale of the wood.

Mr. Quick has told you something about how the lakes fill up. I saw the Loch Raven dam built, and while it was five miles long, it is now practically no miles long. It is carried on the books of the water department as a storage reservoir, containing I don't know how many millions of gallons. It does not contain anything of the kind. Its capacity is reduced probably three-fourths by filling in, and it is only a question of time when what has happened to Lake Roland and Loch Raven must happen to the other reservoirs. The city of Baltimore is growing, and will require more and more water in the future, because the larger a city grows the greater becomes the demand for water; greater than the proportional growth of its inhabitants. My main object is not only to secure a good water, but a sufficient supply for the future.

Queries: By the Laurel Board of Health: Should not the law governing the reporting of contagious diseases be so amended as to omit mention of mumps and whooping cough and to include cerebro spinal meningitis?

Should not the law indicate how suits for failure to notify infectious diseases are to be brought, who is the prosecuting party and what Courts have jurisdiction?

Dr. Billard: I asked the first question because, while the law is a very good one, I would like to know if it can be made practical. Even though these two diseases are infectious I know of no way by which the health authorities can prevent their spread. Secondly, they are so seldom of a grave nature that there doesn't seem to be good reason for including them in the list, while the other disease mentioned I think should be included.

The second question is asked because the law doesn't seem to be specific on that point.

Dr. Stabler: I am very glad the question has come up in this shape, because I have heard physicians repeatedly express the opinion that it was ridiculous to report whooping cough. As regards mumps I have nothing particular to say, but as regards whooping cough I must differ with this opinion. This disease often proves fatal. In my small experience of sixteen years' practice in the country I have seen no less than four deaths from whooping cough, and one of those was the mother of a large family of children, who were left helpless orphans on the hands of a poor man. That case was acquired from the patient's brother, who had whooping cough and was walking about the neighborhood spreading it. I think we should take steps to prevent the spread of diseases that only sometimes prove fatal. I remember that at our first meeting Dr. Owings told us of the beginning of an epidemic of whooping cough; two children came to him with this disease and he told them not to go to school again until he gave them permission. They did not obey him, but went to school, telling the teacher that Dr. Owings had given them permission to come. The disease was introduced into that school and it spread through Ellicott City and across Howard county, visiting almost every school in the county, and several deaths resulted from it. It passed on into Montgomery county, where it continued to rage for at least two years, if indeed it has stopped yet. That was all due to the fact that there was no isolation of cases. If the children who have whooping cough were obliged to stay at home and kept by themselves there would not be as many deaths from that disease as from scarlet fever. I do not remember hearing of a death from scarlet fever since I have been practicing medicine in that neighborhood, simply because every case that appears is promptly isolated. I see no reason why physicians should look upon this provision of the law as ridiculous.

Dr. Owings: In reference to the first query I want to say that mumps is usually a very innocent disease, but whooping cough I think results in pretty nearly as many deaths as measles or scarlet fever, possibly more. If you see an epidemic of whooping cough in the winter time, you will observe a number of poor little children going to their graves with whooping cough, or its sequel, pneumonia, which often winds up the scene.

The President: Or tuberculosis. I have just seen such cases.

Dr. Owings: Yes; I am, therefore, very particular in my county to try to compel people to prevent their children with with whooping cough from attending the schools.

With reference to the second question, I think it is one of the most important things we could discuss. I have had a trial of this thing, and I know of one case where a physician was attending a patient with diphtheria, he used all the precautions necessary, but I did not hear of the case for three months, and when Dr. Fulton called his attention to that fact, he claimed that he had reported the case to the Health Department of the city of Baltimore or of the State. Now there are too many cases of infectious disease where the family employs no physician, and the law should be very binding to compel them to make such reports. There is an instance in my county at the present time, where a physician reports a case of scarlet fever and says there have been two other cases in the same family previously, but that the father did not think it necessary to have physician, because they were of a mild nature. I wrote to the school teacher about this case. On Wednesday last we had a teachers' institute in our town, and I met the teacher of that school. He said there was not a family who had children to send to his school but whose children had had scarlet fever. No care was taken and no effort made to restrain the children who had the disease from running around as soon as they began to get well. How can we best reach the people who have no physician and get a report of the infectious diseases occurring amongst them?

Dr. Fulton: I happen to be the author of this law, and some explanation is due the society and Dr. Billard especially, who asks these questions. There are several reasons for keeping these simple diseases in the list that do not appear in the name of the disease itself. I never knew of a death from mumps or chicken-pox, but I think they should be included in this list. There are some men practicing medicine, very few but dangerous, who like to conceal their true diagnosis in some cases. Mumps should be reported, because it is possible by the use of that name to conceal some cases of scarlet fever and diphtheria. Chicken-pox should be reported, because it may conceal small-pox. Sometimes it is not through error of diagnosis that this happens, as we can see in one epidemic, at present in progress, where the term has been used as a deliberate falsification.

When I submitted this law at Annapolis I had not the slightest idea it would be passed. I was at the same time making a strong fight for another law, and this one got through under cover. I do not think anything should be taken out of it, because after all these are always matters of administration. You need not compel physicians practicing in your neighborhood to report every case of mumps, but there may come an occasion when it would be well to let some one of them know that you have this law as a hold upon him.

As to the second question, I do not think much of a mistake was made in not naming the prosecutor. The State's Attorney has a great deal of work to do, and if in addition he has private or political reasons for not prosecuting an individual it will not be done. The best method would seem to be for the board officer to have a warrant issued for the arrest of the violator, and hold him to await the action of the grand jury.

Dr. Owings: Dr. Fulton need not make any excuses for the law, for we should be very thankful to him for securing it, and I hope when the Legislature meets again, we may be prepared to back him up in securing any improvement to it he may wish.

Dr. Chaney: I believe it is always the duty of the State's Attorney, or any member of the grand jury, to take notice of a violation of the law. It seems to me then it should be sufficient whenever we know of such a violation to call the attention of a member of the grand jury to the matter.

Queries: By the Board of Health of Frederick City: Should children living in a family where typhoid fever exists be excluded from school? If so, why?

In small cities and towns, should the Local Board of Health have charge of the disinfection, at public cost, of homes after diphtheria and scarlet fever?

Dr. O'Donovan: From the child's standpoint, the only means by which he can carry typhoid contagion to other children, that is, supposing the child is not sick of the disease himself, is by the food carried in his lunch basket. If that food be infected and other children assist in eating it, they may become sick, but that is about the only way I can think of that the disease might be spread by school children. Of course in typhoid fever, even in children, it is well to remember that it is not only by the fecal matter that the disease is spread, it has been demonstrated that the urine carries the germs also. If the child is sick himself, however, he will not want to go to school, for children are pretty sick in typhoid fever, even in the early days. So far as the danger of spreading the disease by children coming from the house in which the disease exists is concerned, I think it amounts to practically nothing.

Dr. Owings: I agree with the gentleman who has just spoken, and I do not believe that in a practice of 48 years I have even seen a child carry the disease from the house in which it existed.

Dr. Fulton: So far from excluding children from school on account of typhoid at home, I should rather favor their going to the school.

Dr. Goodell: In regard to the second question, it was asked because I have found, after two and a half years' experience as health officer, that the matter of disinfection is very improperly attended to. I have in my possession a formaldehyde apparatus owned by the city which is at the service of any physician practicing there, but it is very rare that any physician calls for it. The time to stop contagion is when the patient is either recovering or dead. That is the important time when the health board should step in and do its work. I feel that instead of waiting for the physician to call for the apparatus, the health officer should disinfect the premises himself. Then there is some one to attach responsibility to. If the law should make it imperative on the health officer to do his work at that time, it would be done and done in the best possible way, whereas if this physician and that one may be guided by his judgment and convenience, he may suggest that the parents can attempt to disinfect the room or house, and the work will, of course, be imperfectly done. The law should be made more stringent I think, and the health officer authorized to enforce it.

Dr. Chaney: I do not know about the local laws in small cities or towns, but I think the State law does require the health officer to do this. I have been under the impression that it was my duty as health officer to do so.

Dr. Fulton: I will read the law on this point. Section 34 a: "He shall give notice to the Board of Health of the State or county, etc., and upon the death, recovery, or removal of such persons, such of the rooms in such house as in the opinion of the Local Board of Health have been infected, should be disinfected by the Board of Health and a written statement of such disinfection given to the householder." The Board of Health has then the power to go in and do the work.

Dr. Goodell: It seems to me it should be made more imperative upon the health officer to immediately take charge of the disinfecting himself.

Dr. Stabler: In our neighborhood it has been the custom to leave this to the judgment of the physician in charge of the case. Some of the physicians do object, however, that it is not their business to do this work, and that it is a matter of public duty for the public benefit. It is for the public benefit, and neither the physician nor the family should be compelled to bear the expense or the labor for the public benefit. It should be done, too, by a man accustomed to doing such work, and a man whom the physician would always welcome.

MORNING SESSION.

Wednesday, Dec. 5th, 1900.

The meeting was called to order at 10:30 a. m. by the president, Dr. Howard Bratton.

The Perils of Culture.

Dr. A. K. Bond, Baltimore.

Man (in his earthly relations) is an animal; like in every respect to other animals, yet endowed with intellectual and emotional faculties far surpassing in breadth, and usually in intensity, those of the highest animal species. By the very uplift of these more subtle faculties of mind and heart he is continually tempted to forget the dust from which he is made, to disown his relationship to the lowlier animal creation; the cruel diseases and the things which he suffers at the hand of the physician pull him back to earth again.

So it is the function both of the disease and of the physician who battles against it to teach the unhappy idealist who lies helpless between them some very wholesome and necessary truths. A refined lady it was who wrote "it is not the painfulness of sickness, but its brutality that I find hardest to bear."

For the keenest intellect and the tenderest emotions of mankind rest ever upon a physical basis; and for their noblest development they demand a perfect physique.

The highest ideal therefore of human culture is one in which the body, the mind, the heart are trained with equal care, and by a wise apportionment of exercise into that perfect harmony of work which makes the complete life. The preservation of this proper adjustment in the education of our youth is a very much more difficult matter than one might think.

History is full of illustrations of the decay and death of nations in whose culture this balance was not maintained, and of the return (by the bringing into the arena of some hardier race) of the power that works world-destinies to the physical basis; whence a truer effort after the uplifting of mankind might set forth. The educated and luxurious Babylonian yields the standard of civilization to the hardy Persian mountaineer; the aesthetic Greek, master of literature and the arts, yields it to the brutal Roman, whose refinement was never but a coarse imitation of that which he had conquered; the Roman in turn corrupted by the very wealth of world-wide empire, and grown effeminate in the midst of his gigantic organizations, yields it to the northern savages who could bathe in icy rivers and whose women were, in defense of their homes and their honor, more ferocious enemies than even their husbands. Last of all we have, in our own day, seen the courtly, devout Spaniard with his noble sentiments quail before the physique of the young western race. "They came at us with their hands!" exclaimed the vanquished Spanish soldiers. Is there not abundance of proof in these and other examples that the highest gifts of intellect and heart must, if they are to be retained by any people, be safeguarded by vigorous physical development?

The retrospect of the past suggests the outlook of the future. Can our nation which stands forth now as the strongest, most compact, most wealthy in the world (perhaps that has ever been in the world), can it, as it passes on into the increasing luxury and increasing intellectual culture of another century, preserve its manhood and its womanhood with unfailing vigor of physique?

To the dweller in our great American cities which grow apace and must in future set the standards of culture for the nation; to citizens like ourselves, I say, the question of the physical development of our youth is the problem of paramount importance at this crisis.

Great moral perils beset us, but to these the people are thoroughly awakened and powerful organizations, religious and philanthropic, are bringing ever increasing resources to bear at points of special danger.

Great educational difficulties are presented to us, but for the solution of these a host of earnest trained thinkers are toiling in every corner of the land. The interest of the people and the government in this subject is not likely to flag in the near future.

But what organization confronts the danger of physical degeneration of our young? Who seeks to arouse the community at large, the authorities of our cities to this great evil which has already silently, steathily, surely undermined so many nations as prominent and confident of safety in their day as we are in ours?

Our city spends many thousands of dollars to give acuteness of brain activity to the children of its citizens. How many thousands of dollars is it spending annually to give these school children healthy bodies? It appoints health officers and limits their duties to sanitary police-work, the removal of nuisances, the control of epidemics, but gives them no authority to take measures for the nobler word of teaching and enabling its citizens to grow up healthy. Such enterprises as the establishment of baths and of play grounds are left to the irregular uncoordinated efforts of individual citizens. There is no authorized leader in such matter, no established centre for the devising and direction of such needed enterprises.

The training of the young in the city is placed in the hands of officers whose knowledge of things is gained largely from books, whose interests center in books who know little or nothing of the laws of health for the young human animal. The restlessness under indoor confinement of the boy whose every instinct cries for fresh air and sunlight, is considered a school crime and punished, mayhap, by a longer imprisonment in the schoolroom. His wild desire for activity which he shares with the young of every other kind of animal, is considered by his teachers. a symptom of sinfulness. and hooking school is met in many cities by special officers sent to arrest the truant. The fact that the good boy in school is likely to be distanced in business struggles by the boy who sat below him in the classes and neglected his books as much as he dared, devoting his attention to sports and developing muscle and nerve vigor, gives the ordinary director of education no cause for doubting the perfection of his curriculum. His business is to get book knowledge into the boy's head whether he has any health left or not.

It is, I think, an undoubted fact that as our cities increase in size, the health of the mass of children in them tends to become less and less vigorous. Is there a tendency among educators to modify the school courses accordingly? In the wealthier circles there undoubtedly is. The roof play ground is built at much expense in their schools, and the playing of games there is made a part of the curriculum. Country schools are becoming fashionable with compulsory outdoor sports, led by the teachers. In the colleges, athletics are now considered so important, that no college for either men or women would dare to compete for public favor without such equipment. In time I believe these tendencies to care for the physical as well as the intellectual growth of the scholar will affect even our public schools. Personally I have no reason to believe that they have yet been appreciated by our public school authorities. There is, it is true, an effort to provide decent sanitary equipments for our schools, to have the rooms cleaned more frequently to prevent the spread of contagious disease from child to child as they sit in the school room, to avoid overcrowding of the rooms to a degree which renders them positively offensive to the sense of smell. But schools are built still (or were till very recently) with yards so hid from the sun that they are too damp for healthful recreation, and the school term has recently been extended so as to take away from the child the afternoon as well as the morning, permitting him to get through his daily labors at this season of the year a half hour before sunset. Under these circumstances, while as a good citizen I submit to the wisdom of the school authorities as far as the acquisition of book learning is concerned, I cannot help believing that our educators have failed to appreciate that need of consideration for the health of the little animals committed to their care, which is felt by the educators of the wealthy class and their patrons. I believe our school board is the best we have ever had, and that it will endeavor to do its duty as it sees it. I believe in the city's future under its new methods of government. It is not, therefore, in an unfriendly but in a friendly spirit that I criticise its actions.

Book learning has long been set up as a fetich for worship, and we must not expect its worshippers to at once turn away from their idolatry. Little by little the light will break in and the true relations of things will be perceived. The public school educator will perceive at last that he is likely to develop neurasthenics rather than healthy men and women and that he has sharpened the intellect of the pupil till it is a wire edge, which for lack of body behind it turns aside when it meets the hardships and strains of the later life struggle. Then he will, like the wise mechanic, take off some of that sharpness and get down to an edge which has not only keeness but endurance.

The physician would, if he could, keep the child out of doors, getting health all day ; the educatator would keep him indoors, getting learning all the day ; as long as free criticism and free discussion is allowed there is hope that a satisfactory middle course may be eventually discovered.

There are some facts concerning the education of girls very much in the heart of the physician which are apparently not known to or not appreciated by our public school educators, and to these I venture to call your attention for a few moments. In my opinion the danger of injuring our city girls by ill-balanced culture is very much greater than in the case of the boys. The girl growing to maturity, or even before she is mature in growth, is taking upon herself more and more the arduous unwholesome employments which were formerly carried on by men ; so that she, with her more delicate nervous structure, is called upon more and more to endure nerve strain in her daily wage-earning to which formerly she was not subjected. Anyone who watches the girls of the city as they go home in the evening from their daily labors in factory and shop will doubt whether the race is the better for this change in woman's sphere of activity. Has her public school course helped to build her the body she needs for these toils? Moreover woman as of old has her own special trials in life to which man is never subjected. When the educator has examined the school girls for the last time and certified that they are intellectually equipped for the struggle of life, there remains still one more examination for which most of them must present themselves, to meet the test of physical perfection. Without a consideration of motherhood no discussion of the education of girls is complete, for it is the great question of all that underlies and pervades and crowns the whole.

Is the culture given to our girls in this great city making them more fit to meet this great test? Is it not rather preparing them for failure under its ordeal? It is a question which is continually on the heart and mind of the practising physician. He has at his disposal resources which are almost unerring if carefully applied in saving the life of the mother; but is it right, is it wise, is it merciful that the bringing up of our city girls should leave them so unfit to meet this great health test?

The man of feeble health and frail body may find some place in the great army of bread winners in which he may not be handicapped by his deficiencies; but every mother, from the queen upon her throne to the scrubbing woman in the alley home, from the gifted genius to the most ignorant peasant, must present herself before the inexorable laws of nature for exactly the same test, which concerns her physical development, her muscle force, her nerve endurance; there is no escape, the laws of mechanics which she must face know not pity. Health, happiness, home are staked upon the result. Is it a wonder that the physician goes forth from witnessing this test with a deepening purpose to plead for healthy rearing of our girls, to protect even at the risk of unpopularity against any custom, no matter how time-honored, no matter by what authority it is upheld, no matter by what authority it is upheld, no matter on what plea it is urged, which tends to unfit the mother for this great final test?

There is something wrong with the city woman. She is physically below par, she seems to be progressively less fit to meet her great physical test. What is the cause of her physical degeneration as compared with the city mothers of past generations, or with the country mothers of today, I do not fully know. It is undoubtedly based on some grave fault in her development during childhood and maidenhood—and I can think of no more profitable subject of thought for the intelligent woman teacher than this. The city mother of today lacks muscle force, she is too nervous, she has too little endurance. Is it sunshine and play that she needs more of as a growing child; is it outdoor sports that will give her muscle; is it freer access to park and country side; is it greater mental quietude in her adolescent years? Until the real cause is known, the physician must continue to combat every effort after culture which even seems to threaten the development of sturdy physique in the growing girl. When he sees her develop into a strong woman, able to bear and nourish her children normally and happily, then and not till then, will his suspicion of the educator cease.

The medical profession may by accumulated skill and knowledge protect the mother from fatal injury, and enable her child to survive the unnatural conditions of its infancy, which her feebleness brings upon it; but the profession cannot by these means check wholly that subtle elusive degeneration of a race which calls upon the profession to cover up its physical defects, with ever increasing complaisance in its confession of deficiency.

I do not think man can solve the problems of womanhood; they must be solved by earnest intelligent women. The duty of the man is simply to stir up woman to attempt their solution and to stand by with sympathy and respect while she finds their true solution. He has a right, however, to protest that the problems of his sex and of public life cannot rightly be taken up by her while the great problems which concern her and her children are passed by. I look forward to the time when women will cease the effort to imitate men in her physical exercises and will devise for her growing girls indoor exercises and outdoor sports invented for women by women and adapted to woman's needs. But this can never come until she shall cease to take up men's sports as mere fads and run each to excess until a new one diverts her fancy. It is a matter of general comment that even now there is a progressive physical improvement in wealthier and leisure classes among young women who have the initial strength to persevere in men's athletic outdoor sports; but few have the strength, the self control and the perseverence to attain the results. To reach and upbuild the great mass of our young women in the cities there is a great need for easier outdoor games, which, taking up less ground, can be enjoyed in even our smallest city parks and playgrounds for cheaper means of access to the larger parks, for the establishment all over the densely populated sections of our city of local playgrounds where the girls can play secure from harmful influences. It may be that, after our proposed sewerage system is established, the back yards of the homes in these sections now consecrated to the cesspool and reserved as a breeding place for mosquitoes, may be transformed into playgrounds or into sections of a common playground for the girls of the adjacent block. Even the money which is now spent in making the cesspools tolerable might be sufficient if diverted to a better purpose and administered by a wise public officer to work this Eden-like transformation. Problems like these do not require so much an increase of the city tax rate as a judicious use of the means now wasted by the community through public ignorance of the great problems of the people's health. There is danger, however, that even after a sewerage system is established here, that ancient and sacred institution, the cesspool, may be simply tacked on to it and remain to dominate the back yard, to pollute the surrounding soil and to breed disease.

"Art for art's sake," "culture for culture's sake" are but expressions of the tendency against which I contend today. How many illustrations one might adduce to prove its folly. One is reminded of the indignant protest of an Austrian (?) general, who was well-nigh perfect in the art of war as practised in his day, when he was brought face to face with the rude Corsican upstart, Napoleon Bonaparte. The barbarous way in which the latter broke through the decorum of the battlefield and hurled his troops on points where no well-regulated soldier would expect them was a matter of scandal to this cultured opponent. The accepted mode of war had become such a perfect art that it was already effete.

One is impressed with the fact that in public life and in social circles the old cultured families are continually being thrust aside by the "new rich," who, while more rude, have a vigor and energy and push which is lost by the cultured. The scions of ancient families first frown upon the newcomers, then give way to them, finally perhaps yield to their superior animal force and fitness for changing world conditions, and perhaps seek shelter beneath their protection and in their employ from the brutality of poverty and hunger. In a few cases the money-making and money-saving power, which is somehow a kin to brutality, lingers for many generations in a cultured family, but how seldom is it so.

One finds the great leaders of men to be usually individuals of large or at least very robust physique, whose refinement, if they have any, is of a less sensitive form than is seen in the highest culture; whose minds are little given to the lighter forms of intellectual expression. They must have these heavier bodily qualities, else they would not be able to endure the burdens laid upon them or would lose touch with the grosser minds of the uncultured masses; for indeed it is only too evident that the higher intellectual education (so-called) tends to separate the recipient from the sympathy of their less-favored fellows.

The graduate of a gilt-edged medical college, who has already graduated as A. B. from a university, if he does not shelter himself in a medical institution must be able to rise to the very top of his profession, as he will fail in competition with the butcher who has had but a year or two of professional training of inferior quality, but who has made the acquaintance of all the mothers and children in the neighborhood, while his cultured rival is making microscopic sections. Here again culture is an instrument so highly sharpened that it is unfit for ordinary rough work.

How often do we see culture become useless from its excess! Is not culture even now driving music from our homes? The daughter of the household, singing with an imperfect technique, which seems to the hearts of her parents almost divine; the simple yet beautiful home songs of old Scotland, fresh with the breath of the hills, are heard no more in our circles of refinement. We pay trained singers once or twice a winter to sing us and our friends "songs without heart;" while the less skilled young people find vent for their feelings on ordinary occasions in the coon song and the rag-time tune. Are our homes the happier or our hearts the more melodious for the change? In our churches the grand old hymns of simple chords are passing away and their place is taken by more cultured tunes, whose harmonies are so difficult that only a trained chorus can bring out the full richness of their often discordant parts. Are the people better and more interested in the service than of old? Is the music as in past days a pathway by which eternal truths may reach the inmost heart?

The artistic taste manifested in the decoration of our homes becomes ever more perfect. The chromo is relegated to the garret, and the engraving, the etching, the painting, takes its place, making the city house a dream of refinement. Yet little by little the most beautiful things that ever came from the hand of God are thrust out. The most beautiful thing in the world to the sight of the healthy wife is the face of her little child nestling in her arms; the most beautiful thing in the sight of the healthy husband is the face of the mother bending over that little one; the father standing amid a circle of stalwart sons is the gift of grandest promise that the God of nations can give to any land. These are even now passing from our cultured city homes with the chromo.

With culture comes refinement of taste, with refinement of taste a more expensive scale of living, with this too long-deferred entrance of the youth upon home building, with this a longer period during which the young men may sow those wild oats, whose harvest reaped later by their wives fill the hospitals and the homes of the city with invalids. Is culture worth this price?

We seek to cultivate the tastes of our public school children by adorning our public school walls with highly artistic pictures. Will the school girl with these tastes be happier than when she drank in lessons of awe and holy yearning from the cheap colored print of the mother and child with which that ancient church which can never be wholly reformed away has ever adorned even the lowliest cottage walls? It is not a public crime to raise the standard of artistic taste in the home without increasing the wage-earning power to gratify it.

A university graduate, I confess that I have always felt nearer the heart of true culture in the sick chamber of some poor patient, whose only ornament on an ill-papered wall was a mean picture of the "Holy Family," placed "just where she could see it," than in the drawing-room of the wealthy, whose highly artistic treasures would some of them, if like the statue of mythology, suddenly comes to life, would surely hide in shame. I can get used to such high art, but is it more ennobling than the other ?

A christian, I have seen wealth and culture developed to such a point that God is no longer needed, and religion becomes an aesthetic cult, and the church is patronized as a sort of eleemosynary institution.

A patriot, I have seen a cultured, intellectual wife living in wealth, balance the mother instinct, the hope of children against the love of luxury, and have saddened to watch her turn a deaf ear to that plea of the Master to whom she professed allegiance, "whoso receiveth such a little one in my name receiveth me;" and I have seen a rough woman in a hovel, amid rags and dirt, with a worthless husband to support, weeping pitifully over the illness of baby number seven, and declaring that she would work her fingers to the bone rather than lose one of her little ones. As I have seen her children grow up into sturdiness and self-respect, I have thanked God that somewhere in our great cities the mother love He implanted is still an unconquerable force that amid poverty and toil and pain will build the greater nation of the future.

There is a culture that applied to plant life gives marvelous beauty and sterility; there is a culture that applied to a nation gives wealth and refinement, while the family little by little dwindles and the nation dies. It teaches that the acquisition and maintenance of comfort and ease is the chief end of man ; that woman, being nobler and wiser than her husband, has a right to shape the home as her sense of personal ease dictates ; that the child, if she has any, has a right to do as it pleases ; that maternity is an unreasonable and disgraceful institution, to be repressed as far as possible ; that divorce is a natural right of any wife who thinks it would add to her comfort. Already the subtle leaven of this false culture works in our midst, its deadly poison is in every social circle. Is not the patriotic citizen under deepest obligation to contend against it ?

Discussion.

Dr. Edward M. Schaeffer: This is an interesting thing to me, as I need hardly say, inasmuch as I have worried the community for many years on the subject. They have had a rest now for a year during my absence from the country, and I am going to ask you to kindly turn me loose for a few minutes and let me speak directly to the point. I wish to say what I think the situation here in Maryland is, and what I think the remedy is. I have given ten or twelve years of my life to the study of the perils and problems of culture, and I have passed the last year in the rural districts of Germany, Baden being my chief centre. In a quiet, leisurely way I took occasion to observe the conditions in that country. In a rural district of the kind, with all the demands for outdoor work, one would think no physical exercise would be thought necessary except as a matter of recreation. One finds, however, even in the small villages of three or four hundred inhabitants, in connection with a large school house, a large play ground, with all the apparatus for exercise. There is every opportunity for healthful exercise in the fields and yet there is the idea that systematic physical education, coincident with mental education, is so necesary in that country that every facility must be afforded.

Now what is the problem here in Maryland? In the first place a medical friend and myself spent some time last winter trying to decide for our own satisfaction how many sane, that is healthy professional men we knew. We gave up without being able to name any. We excluded every one of our acquaintances until only he and I were left. Then he objected to me, and I objected to him, so that we did vote any one quite sound. It is very unusual to find a perfectly healthy man, a man who can work without fatigue and without stimulants, a man who is healthy in every part of his nature. A healthy woman is a greater rarity. A community is not alive that is unaware of the value of systematic physical education. In our schools and colleges there is no provision for such education. Most colleges have their athletic associations, but these do not reach the average student. They serve a purpose of their own perhaps, but can we not rate systematic physical education co-ordinate with mental training for every individual? Every boy should be taught to train his body as well as his mind, and the teacher of the physical department should be on a plane of equality with the teacher of any other department. I read the other day that most of the health ideas of the average person are secured from the advertisements in the newspapers, and I really believe that is the case. It has been said there should be a censorship for the press and it is true that there is nothing more plausible than a lie in print. I remember a lecture I heard at the Peabody many years ago in which the speaker gave a definition that impressed me very much as to the difference between a trade and a profession—the speaker said that in a trade people get what they call for, but in a profession they have to take the best. Now why shouldn't medical men take just that high attitude and insist upon the patient taking the best and paying for it. Until we get rid of the idea that health depends upon the taking of medicine and not upon a knowledge of the body and its needs, I do not see how we can expect to change affairs. This association was formed for the purpose of disseminating such knowledge. Physical education is used today largely as a side issue or a recreation. Children are not examined when they enter school to find out what their physical needs are, as they are to find their mental requirements. Such an examination should be made by a competent man who has thoroughly studied the question. The schools here that are well equipped with gymnastic apparatus find that young men come to them in order to get the education they cannot obtain in other colleges. It is an unfortunate thing, but it is true, that the men who take the high places in the schools give a pretty sure indication that they will not be heard from in after life when the real tussle comes.

I was reading the other day that it was a severe tax upon any clergyman to preach two sermons a day, and I can add that I have certainly found it a severe tax to listen to them. If the salvation of the soul is essential to the teaching in the morning, would it not be well to consider the salvation of the body in the evening?

Dr. Bond: This matter is certainly a very important one for our consideration. Undoubtedly a strong man has more common sense in the long run than the weak man. I say this with personal feeling, because I know myself what a bad physique means. What the people need at present is not reproof, but education on the subject. I believe there is many a man who doesn't know what good health is, and many women do not seem to care. Many a woman has a backache all the time, and so do her friends, and she comes to think that the backache is a natural and essential part of life. A man takes to drink because his stomach is not good, or in his weakness he is unable to bear the strain of his business. My personal attention was directed to this study very largely through the examinations of recruits for the last war. I could not have passed the examination, and I presume there are many men here who could not pass it. I had recently to examine some young men for the navy, and I found that it required a physique of the highest order. The navy requires its men to have good teeth. How many of us can show a whole set of teeth? The importance of this matter should be kept before the public.

The Duty of the State of Maryland in Respect to Tuberculosis.

By Joseph E. Gichner, M D., Baltimore.

Professor Baccelli, in his address as President of the Tuberculous Congress at Naples, said that at the present time whereever civilization flourishes a "Holy War" against Tuberculosis has been begun.

The preparations for this war have been going on since Koch made the eventful discovery of the cause of consumption.

The close of the nineteenth century cannot be more fittingly celebrated than by making this war a universal one waged against a universal foe.

The enemy, as you all know, slays and tortures more victims by long continued sickness, suffering and privation, than bullets of the enemy in actual warfare, or the acute contagious diseases whose spread can be watched and controlled by immediate means, and for whose stay we have the help and resources of municipal and State government.

Our foe is an insidious one. He walks wherever darkness, ignorance, poverty and vice exist, wherever human beings are overcrowded, where they have to work under adverse circumstances, and where they do not avail themselves of the bounteous and free gifts of nature—pure air and sunshine.

But now from the labors of the scientist, and the long continued experience and work of the practical physician and sanitarian, the haunts of the enemy, his mode of procedure, and his activity have been fully recognized.

And recognizing fully the omnipresence of the enemy our war has to be fought on very broad lines.

We must enlist not only the physicians, but also every educated man and woman, every legislator and teacher.

Our weapons must be: first, education and enlightment of both Legislatures and the public.

Second, a broad philanthrophy, too broad for the benevolent individual or society.

The State and Government must now take up arms. Our mode of warfare is humane and considerate, and will entail no hardships.

This grand movement against the volkskranheit, or the people's disease, has become fashionable.

Princes, Kings and Emperors have not only by their interest and presence at the various congresses held within the last few years given tone and sanction to this departure, but also by magnificent gifts of money and property helped greatly to make it a success.

Can we in Maryland, famed as a centre of civilization and education, be behind in this movement?

Let us consider actual facts as they are found in this State. My statistics are gathered from material at hand in this city from the city mortality list of the last five years.

1894:	Deaths from consumption	1,106
1895:	" " "	1,141
1896:	" " "	1,122
1897:	" " "	1,047
1898:	" " "	1,061

1899: There is seemingly a reduction of mortality from tuberculosis, the number of deaths from this cause returned being 974; but to this must be added tuberculosis of various organs, as well as general milliary tuberculosis, 253, divided into meningeal 63; larynx, 13; peritoneum, 19; skin, 2; other organs, 24; general tuberculosis, 124; scrofula, 8.

While this is an apparent decrease of mortality in this city, the truth is that there is not only no decrease, but probably an increase. Of course, there can be no estimate of the actual number of tuberculous patients in the city based on these figures, but from the statement of Dr. Osler, whose estimates are always careful, there must be at least ten thousand such patients in the city of Baltimore.

Can we permit this large number of deaths in the light of our present knowledge from a preventable and curable disease, and can we tolerate the untold suffering and economic loss, not only to the individuals and their families, but to the State as well, arising from the many thousands of unreported cases?

An illustrative case may aid us materially in arriving at just conclusions. It should always be borne in mind that afflicted people of wealth can have the comforts that wealth can purchase, and that at a minimum of sacrifice, but the movement which we propose is primarily intended for the benefit of the great masses of toilers, the plain people, who cannot hide their afflictions nor prevent contagion, because of economic conditions. I select a factory worker, one who comes into close contact with his fellows, whose sputum is thrown everywhere.

The disease begins insidously, perhaps following pneumonia, la grippe, pleurisy, bronchitis or some condition causing lowered vitality. The patient is attended by his physician amidst unfavorable surroundings, or at the hospital under unfavorable conditions; he is obliged to go to work at the earliest possible moment, before the local lung disease has had a chance to heal; he distributes his germs among his co-workers and fellow-citizens, and in course of time he breaks down. Again the physician advises rest, or a few weeks at the hospital or at home, an injunction which it is often impossible to comply with, or if complied with it is merely a temporizing matter, the surroundings being unfavorable, the mind agitated, the spirits depressed, and perhaps the family starving. High feeding, one of our best means of treatment, not being available, the patient's strength and resisting power diminishes, till at length he is a candidate for the charity organization society, or for Bayview. Here is an illustration of the loss to the family, the community and the State; and in this connection it should be remembered that most of these cases are in the prime of life, from fifteen to thirty.

What provision have we in this State and city to counteract these conditions?

1st. The Home for Consumptives, a charitable institution near Towson, accommodating about thirty persons, in all stages of disease.

2d. Bayview has room for fifty—twenty-five white males, fifteen colored males, and ten females.

3d. Jewish Hospital has a ward accommodating six, built two years ago.

The value of these places as *curative* institutions is naturally almost nil.

Accommodations for eighty unfortunates in an annual total of ten thousand sufferers is certainly a showing of which we, standing at the height of Christian civilization at the dawn of the twentieth century, may not proudly boast!

How can this common scourge be cured and contagion prevented? By educational, prophylactic and curative means.

A. Educational.

1st. The training of the child and building up of its resisting power.

2d. The effort by physicians, by all means at hand, to recognize the disease in its *primary* stages and at once institute measures looking to the protection of the patient, and his family.

2d. The formation of Societies composed of lay and professional members for the distribution of educational literature, and the discussion of preventative and curative measures and other problems presented.

B. PROPHYLACTIC AND CURATIVE.

1st. Notification.

a. To the family and patient, looking toward preventive measures and the assistances of the patient himself in his own cure. The ill-effects on the mind of the patient can be more than counteracted by educating him to know that by intelligent effort he can overcome the disease and save himself, his family and his fellows.

b. Notification to the health authorities, for statistical purposes only, entailing no placarding or restriction of the rights or liberties of the diseased or his family, and thus giving the health department, on the advice of the physician only, an opportunity of protecting the community in cases where flagrant disregard of sanitary rules, or poverty, prevent proper sanitation.

Massachusetts, New York, Michigan, Illinois and various European countries have already led the van in such measures.

2d. State or Municipal Hospitals for the care of patients in the advanced stages.

3d. State or Municipal Sanitaria for incipient or primary cases and such cases as may be cured or arrested.

What is the present cost of consumption to the State, Municipalities and citizens?

1st. The cost, in loss of life, per annum, according to the lowest computation of $500 per life (the figures ranging from this valuation to over $1,000), would for the city of Baltimore alone, counting only one thousand deaths per annum, amount to five hundred thousand dollars per year, and this sum at five per cent. represents a capitalization of ten million dollars. I do not doubt that a capitalization of twenty million dollars would come nearer to the correct figure.

2d. Costs to the Hospitals ($100,000, capitalizing at 5 per cent., to $2,000,000.)

3d. Costs to the Dispensaries.

4th. Costs to Bayview.

5th. Costs represented by the deterioration of the race.

6th. Costs represented by the spread of immorality and intemperance and the consequent expenses entailed by the courts, reformatories, orphan asylums and punitive establishments.

What would be the probable cost of establishing tuberculosis hospitals and sanitaria, and for maintaining the same?

Of course, these figures are necessarily speculative.

For the construction of a hospital in the city or its vicinity, $100,000. To this add the cost of equipment and maintenance, including salaries.

For the construction of two sanitarias in locations most conducive to cure, each $100,000, or $200,000. To which again we must add the cost of equipment and maintenance, including salaries. Consider the immense saving, and curative and economic effects of such a departure.

I desire to read resolutions on tuberculosis adopted by the section on hygiene and sanitary science, at the meeting of the American Medical Association at Atlantic City, June, 1900:

"WHEREAS, There is large demand for official statements relative to some of the questions pertaining to tuberculosis; therefore we—

Resolve, That 1, it is best that the policy of medical societies, medical officers and medical men be one of education.

2. Steps for the suppression of tuberculosis in this country must be so gradual that organized opposition shall not be engendered.

3. It is the duty of every national, State and municipal government to distribute tracts, arrange for lectures, and in every feasible way educate the people along the following lines: A, tuberculosis is contagious; B, it is preventable; C, it is curable; D, it is eradicable.

4. Every citizen of the United States having tuberculosis should have the privilege of living in a tuberculosis hospital; every such citizen should be strongly advised to accept such privilege.

5. Hospitals for cure are almost as essential as hospitals for homes.

6. A temporary residence in a tuberculosis hospital (if the patient cannot remain) is desirable, as in such a residence, hygienic laws, regulations concerning expectoration and danger from contagion can be inculcated.

7. Crowding, bad ventilation and bad drainage are potent factors in the propagation of the disease; this applies as strongly to animals as to man.

8. The present method of arrangement and management of eleemosynary institutions, and especially those in which restraint is a factor, are productive of tuberculosis.

9. The condition of the animals furnishing food in the vicinity of large cities is a subject for consideration by the authorities.

10. While American statistics are so incomplete as to be misleading, nevertheless it is our opinion that the death rate from the tuberculosis in this country (rural and town population together) does not exceed one-ninth of the death rate from all causes.

11. While the number of people dying from tuberculosis appears to be decreasing, nevertheless, excluding pneumonia, tuberculosis destroys more lives than all the remainder of the contagious disease combined."

The knowledge that consumption is a contagious and infectious disease, that it is preventable, that its spread can be restricted, that it is a curable disease in many instances, and especially in its early stages, has become the common property of most enlightened people.

As this knowledge is being spread the people will naturally demand of their municipal and State legislative bodies active measures for the protection they are entitled to.

Query: By the Board of Health of Baltimore City. Would the reporting of tuberculosis serve a useful purpose?

Discussion.

Dr. James Bosley: I think the reporting of cases of tuberculosis will not be practicable until the education of the public has gone a little further, and the attitude of the physician towards the patient has changed. All of us who have cases of diphtheria, scarlet fever, small-pox, etc., at once tell the patient the character of the disease he is suffering from, but there seems to be a hesitancy on the part of the profession to tell their tuberculous patients the nature of their trouble. Just as soon as we can offer as good an assurance of a cure in this as we can in other diseases, I believe the reporting of cases will be feasible.

Dr. G. M. Linthicum: As regards the matter of notification of cases to the health department I think that in spite of the fact that the present time is not a favorable one to adopt the method, it is nevertheless time to begin to teach its advantages. It takes years to educate the public, and even to educate the doctors up to the fact that this disease is eradicable, and, besides, that perhaps we still have to educate the physician to recognize consumption. I am sorry to say that a lot of cases come to us with the diagnosis of bronchitis or a little weakness of the lungs. Now that little weakness means, nine times out of ten, tuberculosis, and if taken in hand at that time the case may be cured. Unless the doctor tells the patient what is the matter with him he is not doing his duty to himself or to the patient. If we could have the health board notified of these cases they could educate them concerning the dangers attending expectoration on the floors, etc., and show that it is a means of communicating the disease to other people, and thus induce them to change their habits. You may say it is not fair to the patient to compel him to stop work before the disease compels him to. That is only delaying the trouble. It is only a matter of one or two years when such a patient is compelled to stop, but what has he done in the meantime? Take, for instance, the Russian Jew district. These people, engaged in making clothing, are expectorating all over the floors and even, to some extent, on the manufactured goods, and you or I purchasing these goods take them home, with a chance of conveying infection to our families. The germs dry on the goods, are disseminated in the air for breathing, and, if we catch a slight cold, there is a particularly good focus for them to work on. By notifying the Health Board of the existence of these cases in their incipiency we should be helping to save many lives in the community.

I think Dr. Gichner spoke of tuberculosis as a contagious disease. In a strict sense it is not. It is an infectious disease, but merely coming into contact with the patient is not going to give one the disease, and as long as these people are led to believe that it is communicable in that sense, just so long will they endeavor to suppress the knowledge of its existence. Dr. Gichner says also that we must have hospitals for these people. I agree with him, and I am interested in the small hospital at Towson in which we are doing all we possibly can, but imagine the size of the hospital required, and the amount of money necessary to take care of the 10,000 tuberculous cases in this city. Can you ever get the Legislature to give us the money to take care of all these? Besides there are many cases in other parts of the State also, and you can readily see that we cannot establish a sufficient amount of hospital space to take care of these cases, and we must begin by instructing the patients how to take care of themselves. I think the health department should have some authority over the sweat shops and other places where the disease is disseminated.

Dr. Bosley: The Health Commissioner has charge of the sweat shops, and is trying to keep them clean.

Dr. Linthicum: I mean you should be notified of at least such cases of consumption as occur there.

Dr. Wm. H. Welch: I am sure Dr. Gichner's paper is a most timely one, and he has covered practically all the important points relating to the subject. I do not believe the medical profession ever entered upon a crusade so important as their attempt to eliminate this so-called White Plague, but it has become evident that resources far beyond theirs are required. We must enlist the services of society at large. That has been done in foreign countries, but not here. The general public is not enlisted here in this movement, as abroad, while the medical profession is now pretty wide awake. In foreign countries it has been easy to secure the interest of the general public by getting a Prince, a Duke or some great personage to take an interest in the movement. What did it mean in England, for instance, when the people interested in this subject were invited to meet in Marlborough house under the presidency of the Prince of Wales? The King of Sweeden gave an immense amount of money for the building of a beautiful sanitarium in that country, and so the work has progressed elsewhere. Now we have not any similar means in this country of interesting everybody and making the movement a fashionable one. We can, however, do much and we ought to do it. We must stir up the public opinion upon the subject, because without the public's aid, our work is practically hopeless. That I hope will be one of the results of Dr. Gichner's paper.

As to the prevalence of the disease perhaps some of you know about the very remarkable statistics published from Zurich. We have usually relied upon the post mortems for our statistics on the frequency of the disease, and the statement was generally made that from 30 to 50 per cent., of all persons have or had tuberculosis. This commission undertook a careful anatomical investigation of persons dead from all diseases with reference to the finding of tuberculous lesions, but did not stop simply on examining the lungs but also carefully investigated the lymphatic, bronchial and cervical glands, and then came to the conclusion that all adults have or have had tuberculosis; that no one reaches the age of 30 without it and that from the time of birth on tuberculosis becomes more and more prevalent. That may not apply to other countries of course, but the probability is that if one should examine all the organs of the body carefully at every autopsy, he would almost always find some mark of the disease. Now that tells us not only the great prevalence of the disease but implies the powers of natural resistance, for the majority of these cases were never suspected. It must mean, on the one hand, an exposure to the virus in a peculiarly concentrated form when it results in the disease as we know it. Evidently we all take in some few of these organisms, but large numbers be taken in, and let the conditions be such as are so often present in sweat shops or tenement houses, with no precaution taken for the disinfection of the sputum, if the exposure be prolonged the chances are that a virulent tuberculosis will be developed.

As regards the matter of notification it is probably true, as Dr. Bosley has stated, that the time is not yet ripe for it. Dr. Linthicum has said we should try to agitate the question, however, in order to bring about a state of public opinion as well as medical opinion that will render it feasible to use these means of prevention. Would it not be well to secure some voluntary notification by the physicians? Something might be done perhaps by this means, and it might also be possible to get notifications of persons sick of the disease in hotels, tenements and lodging-houses. That would at least insure the disinfection of rooms in the hotels or boarding-houses where persons die of the disease, and we would thus to some extent lessen the dissemination of the disease.

I do not quite see the force of Dr. Linthicum's argument about the hospitals. All of these 10,000 cases do not require hospital treatment, of course, and even if we could not treat all that need it, that is no reason why we should not attempt to secure treatment for as many as possible. I think all who have studied this question have come to the conclusion that there is a necessity for both private and State sanitariums.

Another means that might be made use of is the distribution of pamphlets among the poor to educate them on this subject.

Dr. Linthicum: I am not opposed to the establishment of such hospitals, but meant that we could not depend upon that entirely.

Dr. Wm. R. Stokes: In line with the suggestion that physicians might notify the health department of the existence of a case of tuberculosis, I think a circular could be prepared so carefully guarded in language that it could be sent to the patient's family without producing any shock. That is done in Boston, and such patients are given very valuable advice without being told that they have tuberculosis. What can be said about the care of tuberculosis might be said also of whooping-cough, and consequently we can speak of bronchial diseases in a general way and without notifying the family that a member of it is suffering from tuberculosis.

Dr. Harry T. Marshall: Some useful results might be gained by notification. It would be a beginning, and in the first place it would serve as a means of education to the physicians, not only in requiring more careful diagnosis, but in that an immense amount of statistics could thus be collected by the health department in a way that no private physician can possibly accumulate them. The health department would also be in a position to disinfect those houses where the patients are unable for lack of money to do so, and could supply these patients with literature, either directly or through the aid of the attending physician, relating to the treatment of the sputum, etc. The weakness of the measure is not proof that it is not a good thing to try. It has been tried in New York, and Dr. Page, who has been practically at the head of the department there, published in last week's Philadelphia Medical Journal a very good account of the advantages and disadvantages of the method. He thinks that possibly one-half of the cases of tuberculosis in New York city are now reported, and the movement is steadily growing in favor. The opposition found at first from the medical profession is disappearing since it has been foand that the plan gives no trouble to the doctor and helps the people.

Dr. Gichner: I have not much more to say, and only wish to urge the formation of a society of lay people to take measures to educate the public and to supply the dispensary patients not only with literature but with cheap sputum cups. They can be taught how to keep their rooms, how to dispose of the sputum, and how to conduct themselves generally. The awakening of the State and municipality to its responsibilities is, I fear, far distant, but by this means we can at least make a beginning.

Adjournment.

Wednesday, *December 5, 1900.*

AFTERNOON SESSION.

The meeting was called to order at 2 P. M. by the President, Dr. Howard Bratton.

The Powers and Duties of Local Boards of Health.

Mr. James U. Dennis, Baltimore.

It is not particularly prepossessing that I should start out with an apology, but since accepting an invitation to speak on this subject I have been unavoidably prevented from getting at my work until so late that it is in rather an unfinished condition. I will present it with the hope that it will approximate the object desired.

In a former paper before this association I traced the evolution of the police power as bearing upon the right of the State to enforce vaccination. It was there shown that this power was the authority of the State to protect lives, health and property by regulating the acts of private citizens, and that it could be delegated to offices, commissions or boards, giving them authority to pass rules and regulations necessary to effect the object of their creation. These boards may be State or local, as their jurisdiction is defined.

We find the powers of a health board in the State Constitution or the Acts of Assembly, and it can only exercise the powers thus conferred; but, when a power is given, duty requires that it be actively used for the good of the people of the State from which it sprung. Statutes conferring such powers are liberally construed by the Courts, except in the instance of the power of arbitrary abatement of a nuisance, where the letter of the law is observed. Nowhere is the element of certainty more necessary than in the law, and nowhere in the law is more certainty required than in defining the powers of these State agencies, which in some cases may have to invade the rights of person and property, precincts most sacred in the eye of the law. No class of legislation is more vital in its importance to the public than that which protects life, and the health laws which provide the public with scientific defense against the attack of a subtle and insidious foe do not stand second in that class. The laws creating boards of health should, therefore, give ample powers for obtaining the fullest benefit that science and good judgment make it possible to have, and these powers should be couched in no uncertain terms. Some of the States have advanced legislation on this subject, and of these Massachusetts seems to have developed most. While Maryland has a quantity of legislation in this field, it is not all that could be desired, nor is it clear in many of its provisions, and some powers which would greatly increase the effectiveness of these subordinate departments of the government are wholly lacking. The laws of the State of Maryland relating to public health and the powers of the health boards should be revised in the light of recent decisions and advanced legislation in other States, so that they may be consonant, concise, comprehensive and effective.

There are two classes of Local Boards of Health—those created by the Public General Laws and those formed under Special Acts of Assembly granting municipal charters. The legal principles are the same where the same grants of power occur, but the powers of the boards created by Public General Law will be the subject for further discussion in this paper.

By an Act of Assembly passed in 1888, it was provided that "The Board of County Commissioners of the several counties in this State shall, ex-officio, constitute a Local Board of Health for their respective counties, and shall have and exercise all the duties of a Board of Health, as provided in this article, except in cases where the charter of any city or town in the State contains provisions inconsistent therewith." The principal duties of these Local Boards, as prescribed in the statutes, are to suppress unhealthy nuisances and contagious and infectious diseases occuring within their respective jurisdictions, but their power of action in the premises must be found in the written law.

In discussing successively these two duties and the powers in the Local Boards of Health to execute them, it would be well first to have a definition of the term nuisance, and it cannot be better stated than is found in the third edition of Mr. Wood's valuable work on the subject, "a nuisance, in the ordinary sense in which the word is used, is anything that produces an annoyance, anything that disturbs one, or is offensive, but in legal phraseology it is applied to that class of wrongs that arise from the unreasonable, unwarrantable or unlawful use by a person of his own property, real or personal, or from his own improper, indecent or unlawful personal conduct, working an obstruction of, or injury to a right of another or of the public, and producing such material annoyance, inconvenience, discomfort or hurt, that the law will presume a consequent damage." The remedies for the wrong, where the facts justify their use, are an indictment and criminal prosecution, an injunction, a civil suit for damages, and a personal right to abate the nuisance. A Board of Health has no powers that are not bestowed upon it by the Legislature of the State, and, while its members would have the power that any other individuals have to appear before the grand jury and there start an investigation by indictment, or under special circumstances abate the nuisance personally, or obtain an injunction restraining its continuance, the board as such could not act without express authority. It is within the power of the State by appropriate legislation to say that a Board of Health shall have the authority to determine what is or what is not a nuisance as relative to the public health, and that its determination shall be conclusive on the Courts, and that summary powers of abatement, much broader than those allowed by the common law, may be granted; nor does it take argument to show that the scope of usefulness and efficiency of a Health Board will be vastly increased by the possession of these additional powers.

The power to enact sanitary legislation which shall have the force of law, and on which a criminal prosecution will lie, may be conferred on a Board by the Legislature, but it has not been given to our Local Boards of Health unless the following statute can be dignified by such a construction. "Such Local Boards of Health shall take cognizance of all unhealthy nuisances within the limits of their sanitary jurisdiction; and any person or corporation refusing or neglecting, after due notice, to comply with the requirement of said Board in this respect, shall be liable to a penalty not exceeding fifty dollars." While this statute does not give the Local Boards of Health all the powers which might be wished for them, it certainly could and should be made effective in suppressing many of the causes of complaint that come to the notice of the health authorities. It does not appear that power is therein given the Board to declare what shall be considered a nuisance, so its operations will be confined to those conditions which the law in general recognizes as unhealthy nuisances. In an action under this statute the burden will be on the Board to prove that there was existing an unhealthy nuisance for which the person or corporation prosecuted was legally responsible, that certain requirements in relation thereto were made by the Board, and that due notice thereof given to the defendant was disregarded. In proceeding under the above statute when the Health Board thinks there is an unhealthy nuisance in its jurisdiction, let the Board serve on that one who is legally responsible for its maintenance a notice of whatever requirements have been made in reference thereto, incorporating in the notice the conclusion that the condition is an unhealthy nuisance, detrimental to the public health, and allowing ample time for compliance with its order, but not specifying the manner in which the nuisance is to be abated. If the notice is disregarded, lay the matter before the State's Attorney for the county in which the nuisance exists. It is the duty of the State's Attorney to advise the Board in such matters, and it would always be well to lay the case before him even before the notice is sent, for there are many technical pitfalls which may thereby be avoided. The crime of disregarding the order of the Board is a misdemeanor, and the criminal proceeding is by the warrant of a justice of the peace, or on information to the grand jury.

Since the board has not the power to bind the courts by a declaration that a condition is a nuisance, it will be well to keep in mind the statement of Mr. Wood in his work on Nuisances, that many things were formerly in the eye of the law nuisances *per se*, the law presuming that by reason of their noxious character they would be productive of injurious results, but the progress in civilization, the wonderful improvement wrought by science in all departments of life have shown that this position cannot now be upheld in reference to them all It is, therefore, not easy to determine beforehand in every case whether the court will hold a condition to be a nuisance, and the success of action on the part of the board may in some instances be uncertain.

The Local Board of Health is required to appoint annually a county health officer, who is also secretary of the board and its executive officer. In the protection of the public from contagious and infectious disease the statute provides: "Whenever any local or county health officer shall receive reliable notice, or shall otherwise have reason to believe that there is within the limits of his sanitary jurisdiction a case of small-pox, or other disease dangerous to the public health, he shall immediately investigate the matter and take all proper steps for the restriction or suppression of such disease or diseases, and the said County Commissioners may incur and pay as other county expenses are paid, the necessary and legitimate expenses thereof." It is further provided that the local health officer shall notify the secretary of the State Board of Health of the existence of any epidemic that may come to his knowledge as being in his own sanitary jurisdiction or contiguous thereto, and it is made the duty of the secretary of the State Board of Health, with all the powers of the State Board of Health to aid the local health officer in devising the most efficient means for its restriction or suppression, or for the exclusion of any threatened disease. The only limitation on the power of the Local Board of Health, acting independently, as found in the above statute, is that the steps must be "proper" for the restriction or suppression of the disease; in other words, what is necessary to be done to accomplish the conquest of the disease may be done. The Local Boards are also given authority to compel the disinfection of public conveyances, premises and clothing exposed to infection, or may order the destruction of bedding, clothing or other articles so exposed; and under certain circumstances persons suffering from dangerous infectious disease may be removed to a hospital by order of the Local Board of Health. Since municipal and county authorities are given the power to provide hospitals, there seems to be ample provision of power in the Local Health Boards for the protection of the public from contagious disease, but their efficiency in dealing with nuisances could be greatly increased by appropriate legislation.

The only other feature to be considered is the jurisdiction of the board in so far as infectious diseases are concerned, that is found in the general law of the State.

The discussion of that feature of the subject is so nearly identical with the paper which it was my pleasant privilege to read before this association a little over a year ago, that I cannot do better than refer to it.

"Society requires each individual to surrender a part of the absolute freedom of action which he enjoyed before he assumed social relations with his fellow-men. The requirements have differed as the conditions of society have changed, but they have always been based upon the rule that no member of society shall be permitted to injure his fellow-members. Broadly stated, the government may impose upon the citizens whatever regulation it may think is for the good of the State, and the individual must suffer if the Legislature considers that society will be benefited thereby. This has been so ever since there were social relations, and it is the duty of the individual to submit to such requirements as may be made, he being equally included in any benefit to society as a whole."

"In our State government one of the greatest, as well as the most necessary, of these powers is called the police power. Particularly is the preservation of the public health a proper and necessary exercise thereof; indeed, this is one of the paramount objects of government. The Legislature is to determine what is necessary to secure and maintain the public health, and cannot be controlled by the courts, except where it exceeds the constitutional limitations of its authority. The State has power to prevent the pollution of a stream which might thereby carry infection to persons drinking water therefrom; much more should it have the right to compel an individual in daily contact with other members of society to take precaution against contracting a disease and exposing others to the danger of its infection. Nor does the fact that we are dealing with a person alter the case. We frequently find that the law of the land, enacted for the good of the public, runs counter to individual opinion."

"The State may create offices, commissions or boards, and invest them with powers looking to the protection of the public health, and the Legislatures have generally provided for these subordinate departments of government, giving them authority to pass rules and regulations necessary to effect the object of their creation. These rules and regulations must not oppose existing statutes nor interfere with the liberty, property or business of the citizen more than is requisite to secure the lawful object in view. The element of actual necessity plays an important part in the enforcement of rules made pursuant to those powers."

DISCUSSION.

Dr. T. Ross Payne: I would request Mr. Dennis to explain section 35, the first article relating to nuisances, and state the exact power that Boards of Health have under that article.

Mr. Dennis: I would say first that I am not an expert on the health laws, and, secondly, that one cannot tell by the casual reading of a statute exactly what might be done under it. I was speaking of that portion of the law particularly when I referred to the double remedy. It provides that where this order is issued by the State Board of Health—and it doesn't affect the County Board of Health at all—that an order may be issued by a judge commanding the person to come before him, and if he finds the nuisance to exist he may require the offender to abate it. Now that is an order of the Court of Equity, which has the inherent power to enforce it.

The only explanation I can possibly make of it is that the man who drew this statute was conscientiously opposed to government by injunction. As a matter of fact it does not make much difference, because it simply provides in a specific way for the abatement of a nuisance by application to a Court of Equity and ends by prosecution in a Criminal Court, whereas in the second section of the law the State Board of Health is given the power to inquire into and investigate a nuisance in any part of the State, and can apply to judges in any court in the different counties, and secure an injunction to stop it. The object aimed at in section 35 can be attained much more easily by the State Board acting under the second section.

Dr. Payne: Do you admit that the Local Board of Health has not the power to abate a nuisance without the assistance of the State Board?

Mr Dennis: I do not see any power that the Local Board has to abate a nuisance, I mean, to go as a Board, and do away with it. They can as individuals go in and abate a public nuisance but as a Local Board of Health I do not see that they have any special power to do so. The only power they have in reference to nuisances is the section I commented on extensively in my paper, and that is certainly wherein I think the law is deficient. As to the power of the State Board of Health I must say that I have not looked into the question very particularly, because my paper of today was only to deal with Local Boards of Health. The State Board of Health can, however, apply for an injunction and the members of a Local Board can do so as individuals.

Dr. Wm. H. Welch: On page 9 in section 5 is a possible reference to this subject, where it expressly says that Local Boards of Health shall take charge of all nuisances in their districts.

Dr. L. A. Griffith: Am I to understand that our Local Boards of Health have really no more power, except through the aid of the State Board, than private individuals have? I believe that is Mr. Dennis' construction and if that be the case then the County Board of Health really amounts to nothing. This affects us in Prince George's County perhaps more than it does any other county in the State and it is a question that comes home to us very seriously. The garbage of Washington is all dumped in our county, and I came here with the hope that I might ascertain from those who understand the law better than I do, what the powers and duties of the Local Boards of Health are, and whether I have the right to abate that nuisance; whether any powers are delegated to us as a Board of Health or whether I am compelled to apply to the court as an individual, or must await the action of the grand jury. I have a paper signed by a great many people in that district, stating that this dumping of garbage is an intolerable nuisance, that the stench is almost unbearable, and that the matter demands immediate attention. It is something that will not bear putting off, but now I am given to understand that my only recourse is to apply to the State Board of Health for aid, or to go as a private citizen and ask the court to restrain the nuisance.

I am authorized by our Local Board of Health to take all the steps necessary to abate this nuisance, and I would be glad to learn how it can best be done.

Mr. Dennis: The gentleman has misunderstood me to a certain extent. I spoke of the fact that you could not tell exactly what is in this section until a judicial construction is placed upon it. If the court should hold that it carries the power to abate such a nuisance, then of course it becomes a powerful instrument in the hands of the Local Boards; but in any event I see no reason why the Local Boards of Health of Prince George's County cannot pass an order declaring the dumping of this garbage to be a public nuisance, and demanding that it be stopped at once for the benefit of the community. If they continue to dump it there, go before a justice of the peace and have them arrested, and the justice must either commit them to jail or take bail and hold them for trial. Of course if they keep it up they can be held for successive offenses, or if Dr. Griffith goes before the grand jury, he can have them indicted for maintaining a public nuisance.

The President: Suppose they are not residents of this State.

Mr. Dennis: They are criminals in this State whenever they come over the line. Of course we cannot arrest them outside of the State, but neither can they dump their garbage without coming over the line.

Dr. Payne: I would like to ask one more question. Can you abate such a nuisance before you have proven its existence? For instance, if you have one of these men arrested, and he is out on bail, can you do anything to abate the nuisance while waiting for him to be tried and convicted?

Mr. Dennis: If he continues the nuisance after he is admitted to bail he can, I suppose, be arrested for every successive offense.

Dr. Payne: Then the Local Board of Health has no power to abate a nuisance?

Mr. Dennis: To abate it in that sense, no, sir.

The President: I would like to call attention to Sections 5 12, on page 9: "The Local Board of Health shall take cognizance of nuisances, etc." Does not the duty imply the power to do such things?

Mr. Dennis: The law only says such an officer shall take cognizance of it, but does not say he shall go in and abate it. He is required to take notice of it, and having done this and having made certain requirements say to abate a nuisance, the people are liable to punishment if they continue such nuisance. The only power given the Local Board is to take notice of the existence of unhealthy nuisances, to serve notice on the individuals responsible, and if they fail to comply with the Board's requirements, they are subject to a fine. Instead of the Legislature saying that a man shall abate a nuisance, it delegates that power to the Local Board, but it has not conferred any further power upon the Local Board. They can serve notice on the individual who is delinquent, and if he does not act on that notice, he is subject to a fine, and I suppose the Local Board can serve successive notices, but it has no other power than to serve notices.

The President: It is a case of the teacher telling the small boy to tell his father that if the boy does not behave he will be punished. In this case the State Board is the father.

Mr. Dennis: That is very much like it.

Mr. Chas. R. Hartshorne: I think Mr. Dennis is right; this is practically a license to continue a nuisance because there is nothing but the fine to prevent its continuance, and if the man chooses to continue paying fines he can continue the nuisance. Practically there are very few men willing to pay such high licenses, and the result will therefore be the abatement of the nuisance.

Dr. Clotworthy Birnie: I think you will find in regard to the enforcement of these laws that one thing Mr. Dennis said is preeminently true, viz, that this Society will have to test these laws. No matter how plain they may appear, some one will antagonize them. Take the case of the hog pens in country towns. In every case I know of they had to go to court to stop it. The same thing applies to the enforcement of all new laws. It is not because the people are ignorant but because the thing is new, and especially in these matters they do not like health officers prowling around their houses. The same thing occurs in regard to the registration of births and deaths. Some have said to me, "you can not make me do this, you can not make me send any reports without paying me for it." There are two ways of looking at this, you can coax some people into obeying the laws and you can prosecute others. In order to make some laws practicable you must pick out a special case, test it in the courts and, if necessary, carry it to the Court of Appeals, and, having won your case, you will after that have plain sailing.

Dr. E. R. Trippe: It seems to me the local health officer is placed in a bad position. In my county I have been making some pretty big bluffs, and though I have not been called so far, I am afraid they will read the law some day and catch me. We have a lot of crab houses in our neighborhood that are at times nuisances, in that towards the end of the season the decaying products give off offensive odors, but if it be necessary to go through a long process before the courts in order to abate such a nuisance, the season will be over and the nuisances ended for the season before anything can be done. The present law seems to give us no power except to scare the people.

Dr. Fulton: It seems to me that Mr. Dennis has made it pretty clear to all of us that this section of the law is a very powerful weapon in the hands of the Local Boards of Health, with one reservation, that is, that the courts do not hold us too close in the definition of what constitutes a nuisance. Granted that that point can be met, this section is otherwise a very powerful ordinance. It seems to me that it would be impossible to get a better case for a test of this law than that referred to as happening in Prince George's county. There can be no doubt in the mind of any court that the dumping of the garbage of a city upon the neighboring county is a nuisance to the latter. If the Local Board can inflict repeated fines by action before the magistrate, that thing can probably be broken up. If not, there can certainly be recourse to the State Board of Health, and that action need not be so slow in a matter so important as the dumping of garbage.

I know this section of the law has been used in some districts with some success. If Dr. Owings, of Howard county, were here, he could give us some information on that point. The single doubt in regard to this section seems to be the difficulty of proving in a court that a nuisance is both a nuisance and an unhealthy nuisance.

Dr. Trippe: I think we should have the power to take such cases before a magistrate, for in the country we cannot always get hold of a judge of a Circuit Court. If we could drag a man up before the magistrate and prove the charges, then we should have some real power.

Dr. Payne: If you try a man before the squire he certainly has the right of appeal to the Circuit Court. I will cite an instance. About one year ago my predecessor observed an epidemic of typhoid fever in Towson, and the secretary of the Board of Health had the water from the suspected wells examined and found it to contain the colon bacillus. He tried before a magistrate to have those wells shut up. The people appealed to the Circuit Court, and today those wells are open, the people of the town continue to drink the water, and the epidemic continues. Now I don't think the Local Health Officer has any power at all if he can't shut up a well that is known to be infected with the colon bacillus.

Dr. Fulton: The proceeding just referred to, however, was not taken under section 12 of this law at all. I think it should have been, but as a matter of fact the prosecution was based upon another law.

Dr. Payne: Has not any private citizen the privilege of appealing to the Circuit Court after a trial before the squire?

Dr. Fulton: Every man has the right of trial by jury, but he can only be tried for what he was indicted for, and can only appeal from that; he cannot appeal under another law than that under which he was indicted. So far as the Towson matter was concerned there were two points of importance in it. One was that it was tried under an obsolete law, and the other was that the grand jury of Baltimore county in 1898 was false to its oath, in that it excluded with utmost rigor all testimony for the State, and admitted with no reserve all evidence offered by the defense. The case was heard in the grand jury room, and concluded in the grand jury room, with the aid and by the advice of counsel for the defense, the State's attorney, if not acquiescing, at least making no strenuous objection.

Dr. August Stabler: It seems to me, in the Prince George's county case, there ought to be no difficulty whatever in proving a nuisance, inasmuch as it is not necessary that a public nuisance is injurious to health, but simply that it is an offense to the sense of smell, for every one has the right to fresh, pure air.

Dr. Wm. L. Lewis: I have listened with a great deal of pleasure to this discussion, and one thing seems very plain to me that the powers at present granted to the Local Boards of Health are insufficient, and it seems to me our duty now is to get this law amended so that Local Boards of Health will be given the power to abate a nuisance.

Query: By the Board of Health of Laurel. Under the present law how can interments without a permit be prevented in cases where no undertaker is employed?

Dr. Fulton: The State Board of Health has instructed all the undertakers in the State that they cannot sell a coffin unless they receive a burial permit, and that the person who wants to buy a coffin, but does not want to employ the undertaker, must bring with him and show the permit to bury; otherwise the undertaker is just as responsible as if he had conducted the funeral. The undertakers seem to understand that thoroughly, and to obey the instructions.

The President: The question seems to assume that there is a loop-hole in the law, but I cannot see it. They may evade it, of course, but the law is clear enough.

Query: By the Board of Health of Carroll county. How can returns of births be obtained from physicians, midwives and parents?

Dr. Fulton: That must be an important question for every jurisdiction in the State has asked it. As a woman does not ask a permit to have a child, we cannot have the same control over the births as over the deaths, but our receipts of reports of birth are improving in a surprising degree. My own conviction is that a full birth rate will not be gotten in many years unless some small fee is given to the physicians or midwives for such reports. In the State of Delaware a fee of five cents is paid, and it is said that the fee secures a full report. I have attended at some births in that State, but did not know at that time that there was such a law, so that I lost some nickels and Delaware missed some reports. In some parts of Maryland some of the sub-registrars get as high as twenty cents for reporting births. I do not think it is necessary to pay that much, but a fee would get full reports.

Dr. Griffith: This looks like a reflection on the physician. I find in our county it is not difficult to get reports from midwives, because they feel complimented by being allowed to report, as it shows that they are doing business. It is the physicians we have trouble with. One came in a little while ago and asked who was going to pay for the stamps. I enquired how many he would require and was told that he did not know. I told him to send his reports in once a month and I would pay the postage. After a few moments consideration he said he guessed we would not have any more trouble over that, and he is now one of the most prompt reporters I have in my district.

Dr. Fulton: The Health Officer of Washington county sends out return postal cards asking for the names of all children born in the county that they may be recorded, and the parents rather like to have the citizenship of their children recognized in that way. He sends these cards to the State Registrar's office, and turning back to the record of the birth we insert the name. Some records, secured in that way, would otherwise not be obtained.

Query: By the Board of Health of Lonaconing. Is a Town Health Officer entitled to fees from the County Commissioners for the registration of births and deaths?

Dr. Griffith: Is that town incorporated, collecting its own taxes and paying its own bills? If so, it ought to pay this bill. In Laurel, an incorporated town, none of these statistics are sent to me and no bill has ever been presented to the County Commissioners for compensation for services. The records are sent directly to the State Officer. We might consider, too, whether it is incumbent upon Laurel's Health Officer to send his reports of births and deaths to me, and let me send them to the State Board, or whether he should send them direct to that Board.

Dr. Fulton: Certainly the registrar is entitled to a fee, and the question is whether a Town Health Officer is the registrar for his town. It has been our effort as far as possible to have the town officers appointed sub registrars, and then, unless the town does pay him, he is entitled to pay from the Commissioners for his reports. The Health Officer of Lonaconing should either get twenty cents for each birth and death recorded, or else the town records should go to the County Registrar.

Dr. C. H. Brace: I would like to suggest that the party who does the work should receive the pay. We have in Allegany county three Local Registrars by reason of their being health officers of three incorporated cities. There will be no difficulty about the County Commissioners paying them. The City Registrar of Laurel is not an appointee of the Prince George county authorities, and the question arises whether the County Commissioners are liable to him for compensation. It is a corporation, having its own officers, who make no reports to the County Officer, and must make them, if they make them at all, to the State Board of Health. Are the County Commissioners in any way responsible for him, inasmuch as they have nothing to do with his appointment?

Dr. Payne: We have sixteen sub registrars in Baltimore county, and I understood that each one should be allowed ten cents for each birth he reported, but I doubt if the County Commissioners really have the right to pay this money. The law says distinctly that the secretary of the Local Board of Health shall be entitled to twenty cents for each birth and death reported.

Dr. H. S. Weusthoff: As health officer of Havre de Grace I have nothing to do with the County Commissioners, and send all my reports directly to the State Board of Health. This is entirely a State matter imposed upon the health officer by the State, and it seems to me very probable that the County Commissioners would object to paying anything for work imposed by the State. I have not made out any statement to our County Commissioners, and I am very much in doubt now whether I would have any right to send in a bill to them. I am also in doubt as to whether they would pay it if I did.

Dr. Fulton: There seems to be a misunderstanding about the State's right to place an obligation to pay upon the County Commissioners. There is no doubt of the State's right to do that. The State has the right to impose upon the county the duty of paying certain definite men for certain definite services. The law says that all towns not already provided with registrars shall have their health officers so appointed. A town of over 5,000, incorporated, may make its own contract if it pleases, but there is no doubt in my mind that, in the absence of town ordinances on the subject, the town health officer has the same right as the county health officer to charge the commissioners this twenty cents for each full record and return of a birth or death. The fee of twenty cents is perfectly fairly charged by every town health officer in a place that has not its own vital statistics bureau. This fee is not for the *report*, but for the *record* and *return*. The question of fees to sub-registrars is not touched upon in the law. A fee of ten cents to each sub registrar has been rather generally adopted by County Commissioners for issuing burial permits. A similar fee is in some counties paid the sub-registrar for receiving and forwarding birth certificates. In a few counties the sub-registrars get twenty cents. I am sure that the larger fee, and the refusal of any fee, have come about because the County Commissioners confuse the registrars with the sub-registrars, and are equally confused about the certificate, the record, the permit, and the return.

Dr. Wm. J. Todd: Then each death certificate costs the county 40 cents; 20 cents to the secretary of the County Board of Health, and 20 cents to the sub-registrar.

The President: Yes, sir.

Dr. Griffith: That is what it costs us.

The President: I have made an arrangement in our county by which we pay the sub-registrars 10 cents, making the total cost 30 cents.

Dr. Todd: Does the Health Officer of Lonaconing report his births and deaths directly to the State Board of Health? If so, does he not make a break in the records of the county? By dividing these statistics you will have two separate and distinct records for the county and that in the possession of the county officer will be incomplete.

The President: I agree with you, it should be reported to the county officer and through him to the State Board.

Dr. Fulton: The records will be just as full and complete in the hands of the State officer, either way. In our registration we do not keep the town of Laurel separate from Prince George's county. If that town desires to keep separate statistics, then the county should not have to pay for the separate report.

Dr. Todd: But the county officer has an incomplete record.

Dr. Payne: I would like to know who in the county, the Secretary of the Local Board of Health or the sanitary officer of the county, is responsible to the State Board of Health. For instance, if a thing is not attended to, who would Dr. Fulton check up, the sanitary officer of Catonsville, or of Towson, or myself?

Dr. Fulton: You mean, supposing there was a case of small-pox in Dr. Mattfeldt's jurisdiction, and notice of it failed to reach the State Board of Health, or if a break appeared in the returns from Catonsville, would we hold you or Dr. Mattfeldt responsible?

Dr. Payne: Yes, sir.

Dr. Fulton: It certainly would not be expedient for us to stand upon the phraseology of the act which gives Dr. Mattfeldt a title. I think perhaps we should hold Dr. Payne responsible, for Dr. Mattfeldt is not the executive of the County Board of Health. The law says that the Board of Health shall report to us within 24 hours, and you are its primary medium of communication with us. If, however, Dr. Mattfeld should report a case of small pox to us before he did to you, he would not be at all relieved of his obligation to report to you, and neither should we inquire or presume that he would at once report to you. We should notify you with all expedition. The information should travel by the shortest route without undue regard to the lines marked out in the statute. If carelessness about local returns of death should appear, we should hold the county registrar primarily responsible, and he in turn should press his sub-registrar. I have selected Dr. Mattfeldt for illustration, because he is not careless in either of these matters.

Dr. Trippe: Suppose the case has not been reported to Dr. Payne, can you hold him responsible?

Dr. Fulton: Yes, we must keep our line of communication clear, and must hold him responsible for his own lines. He in turn can hold Dr. Mattfeldt responsible for delay or failure in notification, and should do so.

Query: By the Board of Health of Baltimore County. Is it in the power of a Local Health Officer to compel property owners to sewer in front of their properties, said properties fronting on a turnpike or county road, the open gutters receiving all the drainage from the houses fronting on such county road or turnpike?

Dr. Payne: I have had a great deal of experience along this line during the past summer. In Arlington, Highlandtown and such places, we have had a great deal of trouble on that account. They have no sewerage and the waste from the kitchens and bathrooms drains out into the open gutters in front of the houses. Should the property owners sewer, or is it the county's duty to do so?

The President: Are these incorporated towns?

Dr. Payne: No, sir; they are suburbs of Baltimore city.

Dr. Mattfeldt: I would say, in relation to Highlandtown, that they have the same law that applies to Catonsville, and the County Commissioners can correct this state of affairs by having the necessary work done and charging one-half of the expense to the abutting property owners, the county paying the other half.

QUERY: By the Sanitary Officer of Catonsville. When houses are not placarded how may neighbors be advised of the danger of visiting a house infected with diphtheria, scarlet fever, etc.?

DR. MATTFELDT: Has the County Board of Health the power to make an ordinance requiring the placarding of houses?

DR. FULTON: Yes, sir; there are seven or eight towns in Maryland now that use the placarding system. For instance, Frederick, Hagerstown, Lonaconing, Frostburg, Cumberland, and to some extent, Annapolis.

DR. W. H. WELCH: Before making a motion to adjourn, I would like to express my feelings as to the importance of this meeting. The characteristic feature that distinguishes it from most of our previous meetings has been the attendance of the County and Local Health Officers. That seems to me to be a movement in the right direction. It has been a pleasure to the members of the State Board of Health to come into closer contact with the Local and County Health Officers, and this exchange of opinions has cleared our views to a remarkable extent.

I have been thinking how wise it would be to have some subdivision within this association by means of which we could bring these Local Health Officers together every year. I think by such a means we could secure improved legislation and, through interpretations of the present laws, not only serve to make them more clear, but render it possible to enforce them to a greater extent. I hope some action may be taken on this matter in due time. We might well consider whether it should be a sub-division of this Society or a special organization to meet occasionally with us.

I am sure I express the appreciation of the members of this Association for the trouble the Local Health Officers have taken to come here and participate in the meeting, and contributing so much as they have done to the success of the meeting.

Adjournment.

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